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KEY

J/F99	= January/February 1999
M/A99	= March/April 1999
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Missouri 1997 Prenatal Drug Prevalence Study

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Bureau of Health Data Analysis

The Missouri Department of Health is mandated to conduct periodic statewide drug prevalence studies to determine the extent of tobacco, alcohol and illegal substance use during pregnancy. This charge is the result of legislation passed in 1991 (sections 191.725–191.745, RSMo) which addresses assessment, education, and referral for drug usage during pregnancy. What follows are the results of the 1997 study with a comparison to the initial 1993 study.[1] Both studies had the same overall design to facilitate comparison.

Methods

A statewide sample of delivering women was secured utilizing a multi-stage probability proportional to size sampling design. Using events from January through May 1996, 65 non-military hospitals in Missouri expected to experience a minimum of 200 deliveries in 1997 were selected for the sampling frame. These hospitals represented approximately 96 percent of the Missouri resident births during that time period.

The state was divided into three major regions. Within each region, probability proportional to size sampling was performed to randomly select eight hospitals from the St. Louis metro region, five from the Kansas City metro region and nine from the remaining outstate region. Before the randomly selected hospitals were acquired, one hospital in the Kansas City metro, one in outstate, and two in the St. Louis metro regions were pulled out and included in the study as self-representors because of the likelihood that their obstetrical population would be cocaine users. This was confirmed in the study. One hundred mothers were selected from each randomly selected hospital except for the four hospitals included as self-representors from which two hundred mothers were selected and certain other very large hospitals from which a number larger than 100 was required to adequately represent the hospital's maternal population.

The study sample represented 60 percent of the recorded births and fetal deaths for the hospitals involved during their respective study periods. The final sample was generally representative of the population of women delivering at the hospitals included in the sampling process when compared on the basis of recorded birth and fetal death records for that time period with regard to the distribution of race, age, Medicaid status and lack of prenatal care. The final maternal chart/urine sample size was 3,096 vs. 2,008 for 1993.

Data were collected during the period May through December 1997. The study population included all women admitted consecutively for delivery at each of the participating hospitals, with pregnancies of 20 weeks or more gestation. Each hospital initiated sample collection on a specified date with significant overlap of collection periods among most hospitals.

A portion of the routine urine specimen collected after admission for delivery was obtained for analysis. Demographic data; obstetrical history, including self-reported use of alcohol, tobacco and other drugs (licit and illicit) during pregnancy; prenatal care status and delivery information were acquired from the obstetrical floor charts and/or normal intake interviews. Additional information included delivery outcome, birth weight, gestational age and prescription medications.

All specimens were analyzed in a laboratory certified by the National Institute on Drug Abuse (University of Missouri, Toxicology Laboratory, Columbia. MO). Laboratory personnel received specimens labeled only with the coded identifiers.

For 1997, all positive screens were confirmed whereas for 1993 confirma-

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tion was completed for a sample of positive screens. Drug detection times vary widely with most illegal drugs traceable in urine a minimum of three days following their use with heavy users of marijuana remaining positive for up to two weeks after cessation.

Expansion weights were developed at the hospital level to represent that hospital's deliveries for one year and to account for over/undersampling. Post-stratification was utilized to adjust the sample's racial (black, non-black), birth weight (LBW, not LBW) and pregnancy outcome type (live birth, fetal death) distribution of deliveries to those of the population in the region and state for 1997. SUDAAN (SUrvey DAta ANalysis) was used to calculate the weighted prevalence estimates and standard errors, taking the sampling design into account for both the 1993 and 1997 studies.

Results

Table 1 shows significant decreases between 1993 and 1997 in estimated prevalence of alcohol (chart abstraction) and cocaine (urine specimen) usage just prior to delivery, with decreases of 54.4 and 46 percent, respectively. The estimated prevalence of cocaine usage decreased for both white non-Hispanic and black non-Hispanics from 0.3 to 0.2 and from 5.9 to 3.2 percent, respectively. The estimated prevalence of alcohol usage as detected by urine was 1.6 percent in 1997. This low estimate was expected because the detection period for alcohol in urine is very short (less than six hours on average). The prevalence of tobacco usage showed no significant change (21.9 in 1993 to 21.0 percent in 1997), while the prevalence of marijuana (4.0 vs. 4.3), methamphetamines (0.2 vs. 0.3) and phencyclidine (0.02 vs. 0.03) showed slight increases.

The estimated prevalence of illegal drug usage decreased by over 50 percent (10.8 in 1993 vs. 5.2 in 1997); however, this may be misleading because most of the decrease is due to barbiturate and opiate usage which have problems with ascertainment. Barbiturates and opiate detection in urine may signal illegal use in pregnancy or use of prescription medications that were not recorded in the chart abstraction process. Cocaine and marijuana combined showed a non-significant decrease from 1993 to 1997. Because of problems with differentiating illegal and legal usage of some drugs and very low detection of some drugs, only the four major substances (alcohol, tobacco, cocaine and marijuana) are discussed in detail in this article.

Significant variation in substance usage between race/ethnic groups was noted with Hispanics having the lowest prevalences for all but alcohol. White non-Hispanic women had significantly higher prevalence of tobacco usage (22.5 vs. 16.5 for blacks vs. 7.5 for Hispanics) than the other two groups. White non-Hispanic and black non-Hispanic women had significantly higher marijuana prevalence rates than Hispanics (4.5, 4.5 and 0.4 respectively). The black non-Hispanic prevalence rates for alcohol and cocaine were significantly higher than the corresponding rates for white non-Hispanics (4.1 vs. 1.2 and 3.2 vs. 0.2, respectively). No cocaine was detected in the urine specimens of Hispanic women.

Table 1. Overall Prevalence of Drug Exposure 1993 versus 1997, Missouri Prenatal Substance Abuse Studies, 1993 and 1997

	1993				1997			
	Chart Abstraction		Urine Specimen		Chart Abstraction		Urine Specimen	
Drug	%	±CI*	%	±CI	%	±CI	%	±CI
Alcohol	7.9	1.3	NT	—	3.6**	0.8	1.6	0.6
Tobacco	22.5	3.4	21.9	3.6	21.7	3.3	21.0	3.1
Marijuana	1.3	0.5	4.0	1.1	1.6	0.6	4.3	1.0
Cocaine	1.1	0.5	1.3	0.6	0.7	0.3	0.7**	0.1
Opiates	NC	—	2.2	1.0	0.01	0.02	NC	—
Benzodiazepines	NC	—	1.3	0.6	NC	—	NC	—
Methamphetamines	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.2
Barbiturates	NC	—	3.4	1.1	0.01	0.02	0.05	0.07
Phencyclidine (pcp)	NC	—	0.02	0.04	0.01	0.02	0.03	0.04
Any drug	25.7	3.4	28.1	3.7	23.6	3.3	23.8	3.3
Illegal drugs	2.0	0.7	10.8	2.5	2.2	0.7	5.2	1.0
Number	**2,213**		**2,213**		**3,096**		**3,096**	

*CI – 95% confidence interval
** Significantly lower (p <0.05) than the 1993 estimate
NT - Not tested for in urine
NC - No cases reported/identified

Table 2 shows prevalence estimates in relation to maternal age. In all cases but cocaine the highest prevalence estimates are noted for the 20–24 age group. For cocaine, the highest prevalence rate was noted for the 30 or more age group, with all age groups 20 and over having significantly higher rates than noted for ages under 20. The trends by age for cocaine usage do not reflect all races because of its low prevalence in non-black groups. For black non-Hispanic women, the estimate of cocaine usage increased from zero for ages under 20 to 10 percent for women ages 30 or older.

The tobacco prevalence for the under 20 age group as measured by urine specimens increased from 17.1 to 23.2 for 1997, with a less dramatic increase noted for women ages 20–24 (25.2 to 27.1). These results of increases in smoking prevalences for these two age groups have also been detected using birth certificate data.[2]

As reflected in Table 3 and from prior studies, "no prenatal care" is one of the major indicators of whether a woman is using one or more of the four substances. Of those women not receiving prenatal care, one in 16 used alcohol, two in five smoked, one in seven used marijuana and over one in five used cocaine. Tobacco usage was significantly higher for all women coming into prenatal care after the first trimester; and marijuana and cocaine usage were significantly higher for third trimester entry than first. Alcohol usage from urine analysis

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Table 2. Weighted Age-Specific Prevalence of Prenatal Drug Exposure, Missouri Prenatal Substance Abuse Study, 1997

	Maternal Age							
	Under 20 (1)		20–24 (2)		25–29 (3)		30 or Older (4)	
Drug	%	±CI*	%	±CI	%	±CI	%	±CI
Alcohol	1.9	1.6	2.5 (4)	1.2	1.5	1.0	0.8	0.6
Tobacco	23.2	4.9	27.1 (3,4)	4.2	18.2	4.1	16.9	4.6
Marijuana	4.9	2.3	5.6 (3,4)	1.4	3.5	1.3	3.8	1.6
Cocaine	NC	—	0.7 (1)	0.5	0.5 (1)	0.3	1.2 (1)	0.8
Number	**520**		**856**		**856**		**848**	

The number(s) in parentheses indicate the other age groups with prevalence estimates significantly lower ($p < 0.05$) than the estimate for the age group under which the numbers are given.
*CI – 95% confidence interva
NC - No cases reported/identifiedl

Table 3. Weighted Prenatal Care-Specific Prevalence of Prenatal Drug Exposure, Missouri Prenatal Substance Abuse Study, 1997

	Trimester Prenatal Care Began							
	First (1)		Second (2)		Third (3)		No Care (4)	
Drug	%	±CI*	%	±CI	%	±CI	%	±CI
Alcohol	1.5	0.6	2.0	1.3	0.5	1.0	6.1	9.7
Tobacco	18.5	3.0	28.7 (1)	5.3	39.3 (1)	15.1	43.9 (1)	15.5
Marijuana	3.6	1.0	5.0	1.9	13.9 (1)	8.9	14.8	12.1
Cocaine	0.2	0.15	0.7	0.6	3.1 (1)	2.9	21.9 (1,2,3)	14.4
Number	**2,196**		**500**		**109**		**51**	

The number(s) in parentheses indicate the other prenatal care groups with prevalence estimates significantly lower ($p < 0.05$) than the estimate for the care group under which the numbers are given.
*CI – 95% confidence interval

Table 4. Weighted Birth Weight-Specific Prevalence of Prenatal Drug Exposure by Race, Missouri Prenatal Substance Abuse Study, 1997

	All Races				White Non-Hispanic				Black Non-Hispanic			
	LBW		Not LBW		LBW		Not LBW		LBW		Not LBW	
Drug	%	±CI*	%	±CI	%	±CI	%	±CI	%	±CI	%	±CI
Alcohol	0.8	1.2	1.7	0.6	1.2	1.7	1.1	0.7	NC	—	4.8	1.6
Tobacco	30.7**	7.4	20.1	3.4	29.9	7.5	21.9	3.9	33.3**	18.4	14.1	3.1
Marijuana	5.9	4.7	4.2	1.0	8.7	7.2	4.2	1.0	NC	—	5.2	1.9
Cocaine	3.3**	2.7	0.5	0.2	0.8	1.2	0.2	0.2	10.2	9.4	2.2	1.2
Number	**219**		**2,855**		**151**		**2,035**		**57**		**634**	

*CI – 95% confidence interval
**Significantly higher ($p < 0.05$) than the not LBW group
NC - No cases reported/identified

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showed no significant discernible differences by trimester care began.

Table 4 shows significantly higher prevalence of cocaine and tobacco usage for women having low-birth-weight (LBW) infants (less than 2500 grams). There were no significant associations between substance use and LBW for white non-Hispanic women; however, for black non-Hispanic women tobacco use was significantly more prevalent in the LBW group.

Prevalence rates were also calculated for expected payment source, region of residence, prior live births and prematurity. Women in the Medicaid group had significantly higher prevalence of alcohol, tobacco, marijuana and cocaine usage than the private insurance group, and their usage was also significantly higher than the self-pay group for tobacco and cocaine. Significantly higher ($p<0.05$) prevalence estimates were found for tobacco and marijuana usage in outstate Missouri compared to the Kansas City metro region. The St. Louis metro region had a significantly higher estimate of alcohol usage than the outstate region. Both St. Louis and Kansas City metro regions had significantly higher rates of cocaine use than outstate Missouri. Women having one through four prior live births had significantly higher estimates of smoking prevalence than women having their first child. Cocaine prevalence increased with increasing birth order with women having three or more prior live births significantly more likely to use cocaine than first time mothers. Cocaine use was nearly ten times higher for women having preterm deliveries (3.8 versus 0.4) than for those having term deliveries.

Summary

All of the substances evaluated, including alcohol and tobacco, adversely effect pregnancy outcomes. The most prevalent substance used during pregnancy in 1993 and 1997 was tobacco, with estimated prevalence of more than one-in-five for both periods. Also of note is the increase in tobacco prevalence for antepartal teens and women in their early twenties. If their smoking behavior is reflective of all teens and young adult women, then we can expect an overall increase in smoking during pregnancy as this age cohort moves through the fertility range.

Estimates of prevalence rates for both alcohol and cocaine show significant decreases; while slight non-significant increases were observed for marijuana, amphetamines and phencyclidine.

As with the 1993 study, women having late or no prenatal care were most likely to use one or more of the substances reviewed. This means prenatal care providers have very little or no time to intervene for this subset of users. However, 72 percent of those using one

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Perinatal Substance Abuse Law

According to sections 191.725–745, RSMo, Missouri physicians are required to:

- **Counsel** pregnant patients on the effects of cigarettes, alcohol and controlled substances.
- **Obtain signatures** from patients indicating that they have received counseling.
- **Maintain signatures** in patients' medical files.
- **Identify** individuals with high risk pregnancies for substance abuse.
- **Inform** pregnant women using controlled substances about available intervention services.
- **Offer referrals** for service coordination by the Department of Health to any pregnant patients at risk or using alcohol or controlled substances.
- **Refer** for service coordination by the Department of Health all infants showing signs or symptoms of prenatal drug exposure or positive toxicology and written assessment for risk of neglect or abuse .
- **Comply** with the child/abuse neglect law (section 210.115, RSMo)

Any Missouri physician or health care provider complying with the above provisions in good faith, shall have immunity from any civil liability (section 191.743, RSMo).

For more information or to make a referral, please contact:

Missouri Department of Health
Bureau of Family Health
Perinatal Substance Abuse
Ph: (573) 751-6215

Haff Disease Associated with Eating Buffalo Fish—United States, 1997

Reprinted from the Centers for Disease Control and Prevention Morbidity and Mortality Weekly Report, December 25, 1998, Vol. 47, No. 50.

Haff disease is a syndrome of unexplained rhabdomyolysis following consumption of certain types of fish; it is caused by an unidentified toxin. Rhabdomyolysis is a clinical syndrome caused by injury to skeletal muscle that results in release of muscle cell contents into the circulation (1). In 1997, six cases of Haff disease were identified in the United States (four in California and two in Missouri) among persons who ate buffalo fish (*Ictiobus cyprinellus*), a bottom-feeding species found mostly in the Mississippi River or its tributaries. This report summarizes the investigation of these cases.

Los Angeles County, California

Patients 1 and 2. On March 8, two Ukrainian sisters (patients 1 and 2), aged 70 and 73 years, respectively, and the husband of patient 2 (aged 75 years) ate fried buffalo fish. Eight hours after the meal, patient 1 experienced neck pain followed by stiffness in her arms. On arrival, emergency medical technicians noted both women were rigid, unable to move, and extremely sensitive even to light touch. On evaluation at a local hospital, the serum creatine kinase (CK) of patients 1 and 2 were 25,000 IU/L and 9454 IU/L, respectively (normal: <120 IU/L); the muscle/brain (MB)-fraction at the peak of the CK was 2.7% and 0.5% (normal: <5%). Patient 1 was treated with intravenous hydration and bicarbonate. Patient 2, who had a history of angina pectoris, also complained of chest pain. During hospitalization, an angiogram revealed occlusion of a coronary artery requiring dilatation. She was treated with nitrates and coumadin. The man did not become ill. Both sisters recovered. Main sequelae were newly diagnosed hypertension (patient 1) and diminished muscular strength (patient 2).

Patient 3. On March 9, a husband and wife (both aged 33 years) from Ukraine ate fried buffalo fish purchased from the same market where patients 1 and 2 purchased their fish. Eight hours after the meal, the husband experienced left-sided chest pain that radiated to his left arm and increased with deep inspiration. He was admitted to the same hospital as patients 1 and 2. A comprehensive cardiovascular examination did not reveal abnormalities except an elevated CK (4140 IU/L) with a CK-MB of 1.4% at the peak of the CK. He reported no history of angina pectoris and had not smoked for 2 years. He did not receive any special treatment. Following discharge, the patient has reported occasional chest pain that he had not noticed before this episode. His wife did not become ill.

St. Louis, Missouri

Patients 4 and 5. On June 8, a Ukrainian husband and wife (aged 66 and 58 years, respectively) ate a dish consisting of ground buffalo fish and carp. One hour later, the wife vomited. Six hours after the meal, they developed generalized body aches and muscle stiffness. On evaluation at a local hospital, the CK of patients 4 and 5 exceeded 17,700 IU/L, and the CK-MB were 4.8% and 4.5%, respectively. The husband had severe pain on inspiration, resulting in respiratory insufficiency requiring assisted venti-lation. His wife was treated with intravenous fluids and mannitol. Following the acute episode, the husband complained of more frequent headaches, and his wife continued to experience tearing eyes, easy fatigability, and pruritus after eating seafood.

Bakersfield, California

Patient 6. On August 8, an 87-year-old U.S.-born man vomited 30 minutes after eating one third of a fried buffalo fish. Twenty-one hours later, he awoke with extreme stiffness and generalized muscle tenderness. At a local emergency department, his CK was 2226 IU/L with a CK-MB of 2.1%. The patient was treated with intravenous fluids and analgesics. Following this episode, the patient suffered 6 months of muscle weakness, primarily in his legs.

Follow-Up Investigations

The origin of the buffalo fish eaten by patients 1, 2, 3 and 6 was traced to the same wholesaler in Louisiana who receives fish from approximately 25 fishermen who fish rivers in Louisiana. The fish for patients 4 and 5 were caught within a 100-mile radius of St. Louis, Missouri. The Food and Drug Administration is attempting to identify a toxin from recovered fish samples. The case histories suggest that the toxin is heat stable; no particular mode of preparation seems to increase risk for disease.

Editorial Note: During the 1920s, the name "Haff disease" was given to an illness characterized by severe muscle pain and stiffness that affected approximately 1,000 persons living along the Koenigsberg Haff, a brackish inlet of the Baltic Sea (1). Subsequent similar outbreaks were identified in Sweden and the former Soviet Union (2–4). Although the etiology was not determined, epidemiologic investigations linked illness to ingestion of fish, especially burbot.

The first reported case of Haff disease in the United States occurred in Texas in 1984 (M. Tormey, Los Angeles Department of Health Services, personal communication, 1997); five additional cases were reported in California during 1984–1986. All U.S. cases have been associated with eating buffalo fish.

Haff disease typically presents as a paroxysm of rhabdomyolysis, with accompanying muscle tenderness, rigidity, and dark brown urine. However,

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as in patient 3, milder presentations also occur. Although the median incubation period for the patients in this report was 8 hours (range: 6–21 hours), symptoms generally appear approximately 18 hours after eating fish.

Laboratory features of Haff disease include a markedly elevated CK level with an MB fraction of <5%. Levels of other muscle enzymes (e.g., lactate dehydrogenase, glutamate oxalate transaminase, and glutamate pyruvate transaminase) also are elevated. Myoglobinuria is often mistaken for gross hematuria (5). Diagnosis is based on a compatible clinical history.

Treatment is supportive and consists of administering large volumes of fluid early in the course of illness to prevent myoglobin toxicity to the renal tubules (5). Possible complications include electrolyte disturbances, renal failure, and disseminated intravascular coagulation. Symptoms usually resolve within 2–3 days. Historically, the case-fatality rate is approximately 1% (1). Clinicians and public health practitioners are encountering an increasing variety of foodborne illnesses, in part because of a diversification of food preparation and eating habits. International travelers, members of ethnic groups with unique cuisines, and consumers of both imported and domestic specialty food items may be at risk for foodborne illnesses that are rare or have not been reported previously in the United States.

Clinicians should be aware of food exposures that pose a risk to their patients and routinely obtain food histories, even from those patients whose illness may not appear to be food-related.

Physicians who identify or suspect cases of Haff disease, based on the clinical presentation, laboratory parameters, and food history, should report them to public health authorities for initiation of traceback and recall of implicated food items. State health departments are requested to report to the Foodborne and Diarrheal Diseases Branch, Division of Bacterial and Mycotic Diseases, National Center for Infectious Diseases, CDC, telephone (404) 639-2206.

REFERENCES:

1. Zu Jeddeloh B. Haffkrankheit [Haff disease]. Erg Inn Med 1939;57:138–82.
2. Berlin R. Haff disease in Sweden. Acta Medica Scandinavica 1948;129: 560–72.
3. Leshtchenko PD, Khoroshilova HB, Sliptshenko, Kaznatshei Y. Observations on haff-uchs disease cases. Vopr Pitan 1965;24:73–6.
4. Strusevich AV. Alimentary-toxic paroxysmal myoglobinuria (Haff-Iuksov-Sartlan Disease). Arkh Patol 1966;28:56–60.
5. Salluzzo RF. Rhabdomyolysis. In: Rosen P, Barkin R, eds. Emergency medicine, concepts and clinical practice. 3rd ed. St. Louis, Missouri: Mosby Year Book, 1992.

Missouri physicians who identify or suspect cases of Haff disease should report them to their local health department or to the Section of Communicable Disease Controland Veterinary Public Health at (800) 392-0272.

In the Breakers

☞ "Healthy People in Healthy Communities" is the 1999 theme for National Public Health Week, which will be celebrated April 5-11, 1999. This national celebration provides an opportunity to recognize the contributions of public health to the nation's well-being and to focus public attention on major health issues in our communities.

☞ **Preparing for the Next Influenza Pandemic**—Several Missourians were featured in a February 1999 live video conference on preparedness for pandemic influenza. Discussion and information was presented on the five major areas of the plan: surveillance, vaccine delivery, delivery of antiviral agents, emergency response and communications. If you would like to view a tape of the conference or have questions, please contact the Section of Vaccine-Preventable and Tuberculosis Disease Elimination at (800) 699-2313. Pandemic Influenza: A Planning Guide for State and Local Officials is available via the Internet at http://www.cdc.gov/nip/temp/pandemic-flu.htm.

☞ **Summer Food Service Program**—Although children anxiously look forward to summer vacation, these three months can cause an additional financial hardship on some families who are barely making ends meet. For these families, summer is a time of concern. Many children in Missouri will miss the nutritious meals they receive at school every day. Thousands of students depend on free or reduced-price school breakfasts and lunches to get adequate nutrition. With your help we can be sure that children in Missouri have a healthy summer vacation. Join us in providing nutritious meals to low-income children in your area through the Summer Food Service Program. For more information, call the Department of Health at (888) 435-1464.

Recent Food Recalls

The following information is provided due to the numerous recalls of food products reported as contaminated with *Listeria*. As of February 26, 1999, only one probable case of *Listeria monocytogenes* associated with food recalls has been identified in Missouri.

What You Need to Know About Listeriosis

Listeriosis is a serious infection caused by eating food contaminated with the bacterium *Listeria monocytogenes.*

1. How great is the risk for listeriosis?

In the United States, an estimated 1,100 persons become seriously ill with listeriosis each year. Of these, approximately 250 die.

Pregnant women are at increased risk; about 10–20% of all listeriosis cases happen during pregnancy. Newborns, rather than the pregnant women themselves suffer the serious effects of infection in pregnancy.

Persons with weakened immune systems, such as those with cancer, diabetes, kidney disease, AIDS, or those taking certain medicines that can suppress the immune system, such as glucocorticoids or chemotherapy are also at increased risk for listeriosis.

Healthy adults and children occasionally get infected with *Listeria*, but they rarely become seriously ill.

2. How does *Listeria* get into food?

Listeria monocytogenes is found in soil and water and the intestines of animals. Vegetables can become contaminated from the soil or from manure used as fertilizer. Animals can carry the bacterium without appearing ill and can contaminate foods of animal origin such as meats and dairy products. The bacterium has been found in a variety of raw foods, such as uncooked meats and vegetables, as well as in processed foods that become contaminated after processing, such as soft cheeses and cold cuts at the deli counter. Unpasteurized (raw) milk or foods made from unpasteurized milk may contain the bacterium.

Listeria is killed by pasteurization, and heating procedures used to prepare ready-to-eat processed meats should be sufficient to kill the bacterium; however, unless good manufacturing practices are followed, contamination can occur after processing.

3. How do you get listeriosis?

You get listeriosis by eating food contaminated with *Listeria*. Babies can be born with listeriosis if their mothers eat contaminated food during pregnancy. Although healthy persons may consume contaminated foods without becoming ill, those at increased risk for infection can probably get listeriosis after eating food contaminated with even a few bacteria. Persons at risk can prevent *Listeria* infection by avoiding certain high risk foods and by handling food properly.

4. How do you know if you have listeriosis?

A person with listeriosis usually has fever, muscle aches, and sometimes gastrointestinal symptoms such as nausea or diarrhea. If infection spreads to the nervous system, symptoms such as headache, stiff neck, confusion, loss of balance, or convulsions can occur.

Infected pregnant women may experience only a mild, flu-like illness; however, infection during pregnancy can lead to premature delivery, infection of the new-born, or even stillbirth.

There is no routine screening test for susceptibility to listeriosis during pregnancy, as there is for rubella and some other congenital infections. If you have symptoms such as fever or stiff neck, consult your doctor. A blood or spinal fluid test (to cultivate the bacteria) will show if you have listeriosis. During pregnancy, a blood test is the most reliable way to find out if your symptoms are due to listeriosis.

5. Can listeriosis be treated?

When infection occurs during pregnancy, antibiotics given promptly to the pregnant woman can often prevent infection of the fetus or newborn. Babies with listeriosis receive the same antibiotics as adults, although a combination of antibiotics is often used until physicians are certain of the diagnosis. Even with prompt treatment, some infections result in death. This is particularly likely in the elderly and in persons with other serious medical problems.

6. How can you reduce your risk for listeriosis?

The general guidelines recommended for the prevention of listeriosis are similar to those used to help prevent other foodborne illnesses, such as salmonellosis. The general recommendations are:

- Cook thoroughly raw food from animal sources, such as beef, pork or poultry.
- Wash raw vegetables thoroughly before eating.
- Keep uncooked meats separate from vegetables and from cooked foods and ready-to-eat foods.
- Avoid raw (unpasteurized) milk or foods made from raw milk.
- Wash hands, knives, and cutting boards after handling uncooked foods.

For persons at high risk, such as pregnant women and persons with weakened immune systems, the recommendations are:

- Avoid soft cheeses such as feta, Brie, Camembert, blue-veined, and Mexican-style cheese (Hard cheeses, processed cheeses, cream cheese, cottage cheese, or yogurt need not be avoided.)
- Cook until steaming hot left-over foods or ready-to-eat foods, such as hot dogs, before eating.
- Although the risk of listeriosis associated with foods from deli counters is relatively low, pregnant women and immunosuppressed persons may choose to avoid these foods or thoroughly reheat cold cuts before eating.

7. What is being done to reduce *Listeria* in food?

Government agencies and the food industry have taken steps to reduce contamination of food by the *Listeria* bacterium. The Food and Drug Administration and the U.S. Department of Agriculture monitor food regularly. When a processed food is found to be contaminated, food monitoring and plant inspection are intensified, and if necessary, the implicated food is recalled.

The Centers of Disease Control and Prevention's National Center for Infectious Diseases (NCID) is studying listeriosis in selected sites to help measure the impact of prevention activities and recognize trends in disease occurrence. NCID also assists local health departments in investigating outbreaks. Early detection and reporting of outbreaks of listeriosis to local and state health departments can help identify sources of infection and prevent more cases of the disease.

A new website has been established to help the public find government food safety information more readily. This site was developed by FDA's Center for Food Safety and Applied Nutrition in consultation with USDA's Food Safety Inspection Service. The site is located at http://www.FoodSafety.gov/.

***Listeria monocytogenes* is a reportable disease in Missouri. Cases should be reported promptly to your local health department or to the Section of Communicable Disease Control and Veterinary Public Health at (800) 392-0272.**

Times Beach Dioxin Incinerator Emissions Exposure Study

Scott Clardy
Brian Quinn
Daryl Roberts
Section for Environmental Public Health

The Missouri Department of Health (DOH) has been actively involved in assessing risks to human health from environmental contaminants since the presence of dioxin at Times Beach was announced in December 1982. The 1988 Environmental Protection Agency Record of Decision for the Times Beach Superfund Site and 26 other eastern Missouri dioxin sites called for incineration of dioxin-contaminated soils and other materials to destroy the dioxin, rather than storing it indefinitely. As the reality of dioxin incineration grew closer in the mid-1990s, some citizens grew increasingly concerned for their health and safety because of potential exposure to the incinerator emissions.

To ensure the incineration process was safe to area citizens DOH, in cooperation with the St. Louis University School of Public Health, conducted an exposure study of persons living in communities around the Times Beach incinerator. The study was designed to determine whether concentrations of dioxin in persons living near the incinerator increased significantly during the incineration process. If elevations of dioxin levels had been seen in study participants (determined through blood test analysis), DOH would have notified the community of its potential exposure in a relatively short time after the incineration process began. Based on the early results, DOH would have made recommendations to the regulatory environmental agencies to take action to protect the public health. To complete the study, DOH requested technical and financial assistance from the Agency for Toxic Substances and Disease Registry.

The incineration process at Times Beach began March 17, 1996, and was completed June 20, 1997. During that time, approximately 265,000 tons of soil and other materials contaminated with 2,3,7,8-tetracholorodibenzo-p-dioxin (TCDD) from 27 eastern Missouri dioxin sites were burned at the Times Beach Superfund site.

To begin the dioxin incinerator emissions exposure study, DOH conducted a complete census of communities in the areas determined to be at highest risk for exposure to incinerator emissions. Participants in the study group were selected from people living in these communities. A community in Manchester, Missouri, was selected as the comparison group and eligible residents were invited to participate. This area was selected because it is similar in many ways (race, gender, age make-up, socioeconomic status, etc.) to the study area, but had no risk of exposure to incinerator emissions. Results from the study group were compared to similar results from the comparison group, to determine the risk for potential exposure to the incinerator emissions.

Only persons between the ages of 18 and 65 were invited to participate in the study. There were 76 persons from the Eureka area (study group) and 74 persons from the Manchester area (comparison group). Persons asked to participate in the study were randomly chosen from a list of all persons in the communities determined to be eligible based on age, health status, and whether they had ever been directly exposed to high levels of dioxin (occupation, military, etc.).

The first round of blood samples was collected in September 1995, during the construction of the incinerator but prior to any testing of the facility. The second round of blood samples was collected in July 1996, about four months after the start of the dioxin incineration process (production burn). The final round of blood samples was collected in June 1997, immediately after the incineration process was completed. The samples were analyzed for TCDD, other isomers of dibenzodioxins (PCDDs) and dibenzofurans (PCDFs), and polychlorinated biphenyls (PCBs). Results were reported on a lipid-adjusted basis. All blood samples were analyzed by the Centers for Disease Control and Prevention, Atlanta.

The blood levels of most chemicals evaluated in this study decreased from pre-incineration to the end of the incineration. In general, these declines in blood levels were statistically significant.

The chemical of primary concern in this study was TCDD. Analysis conducted on blood samples from persons who completed all three blood collection rounds found the average of this chemical decreased in the study population from 1.79 parts per trillion (ppt) before the incineration began to 1.23 ppt after the incineration stopped. A similar decrease was observed in the comparison population, 1.46 ppt to 1.23 ppt.

TCDD is considered the most toxic of the PCDDs, PCDFs, and PCBs, but is only one member of these groups of chemicals that might produce adverse health effects. Members of these classes of compounds are often referred to as "dioxin-like compounds." One of the properties of this group is the ability to bind to the Aryl hydrocarbon (Ah) receptor. The ability of dioxin-like compounds to bind to the Ah locus is related to the compound's ability to produce a toxic effect. The relative binding constants of each dioxin-like compound were converted to a toxicity equivalency factor (TEF). Multiplication of this factor by the concentration of the compound resulted in TCDD equivalencies. Summing these equivalencies across all dioxin-like compounds

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Private Provider Access to MOHSAIC

Nancy Hoffman, R.N., M.S.N.
Center for Health Information Management and Epidemiology

The Missouri Department of Health recognizes that information, especially information on the immunization status of Missourians, is not only crucial to public health but to health care providers as well. Based on this belief, the department continues to expand access to the Missouri Health Strategic Architectures and Information Cooperative (MOHSAIC), a statewide integrated information system.

As of January 1999, all local public health agencies in Missouri had access to the initial MOHSAIC application. This contains generic registration, appointment scheduler, and immunization and vaccine inventory components often referred to as the "immunization central registry." MOHSAIC is the only state-supported immunization registry in Missouri. The centralized database is pre-populated with demographic information on all births registered in Missouri since 1994 and all WIC participants. The system also includes information on immunizations submitted for the past two years to the state Medicaid system. MOHSAIC interfaces with the Department of Social Services system to identify if a client is currently eligible for Medicaid services.

Beginning April 1, 1999, the Department of Health will focus its efforts on identifying and providing MOHSAIC access to private providers. This access can be accomplished using several methods. Providers without computers can work with their local public health agency to gain information about their clients. Providers with a computer that has Windows 95 can access the database via an "800" number using a modem and telephone line. An additional option is being developed that will allow providers with a computer that has Windows 95 to access the system through an Internet connection.

Missouri law (section 167.183, RSMo) allows the sharing of childhood immunization information with appropriate parties without a release of information. Security features have been implemented which limit access to MOHSAIC to those who have completed an access request form containing a confidentiality statement and have received their initial user identification and password. Regardless of which method a provider uses to connect to MOHSAIC, only those persons who have appropriate access will be able to retrieve data.

The anticipated benefits to providers include:

- Ready statewide access to client-specific immunization information. Immunization information is cumulative beginning with the first dose of hepatitis B vaccine indicated on the birth certificate. The electronic record follows the child from one provider to the next.
- Ability to print an official copy of the immunization record for school or day care enrollment.

NEW SCHOOL IMMUNIZATION REQUIREMENTS

New immunization requirements are expected for the 1999-2000 school year. The Department of Health, Section of Vaccine-Preventable and Tuberculosis Disease Elimination is amending the School Immunization Rule to more closely follow the recommendations of the Advisory Committee on Immunization Practices (ACIP), the American Academy of Pediatrics (AAP), and the American Academy of Family Physicians (AAFP). The proposed changes include:

- Requiring three (3) doses of Hepatitis B (HB) vaccine for students entering grade seven (7),
  and
- Requiring four (4) doses of diphtheria, tetanus and pertussis (DTaP/DTP) vaccine for students entering kindergarten.

In addition, the polio section of the rule has been updated to include the use of either the IPV/OPV sequential schedule, an all-IPV schedule, or an all-OPV schedule. If a combination of IPV and OPV is used, four (4) doses are required.

The rule amendment was filed with the Secretary of State's office in January and should become effective for the 1999–2000 school year.

Questions concerning the rule changes should be directed to the section at (800) 699-2313.

- Ability to generate notices to remind clients of upcoming scheduled vaccinations or to recall clients due for vaccinations.
- Reduced number of times a chart must be pulled to determine immunization status and create a copy of the immunization record.
- Decreased number of "Release of Information" forms that must be processed when a client changes providers.
- Decreased delay in determining the vaccine status of new or existing clients.
- Ability to identify when other household members are due for vaccinations.
- Ability to quickly identify clients at risk when an outbreak of a vaccine-preventable disease is identified.
- Ability to do Vaccines For Children (VFC) management and required reports (if provider uses the inventory component).
- Ability to identify clients who have received a dose of vaccine from a recalled lot (for providers using the inventory component).
- Ability to generate an electronic input file to perform clinical assessments using the Clinic Assessment Software Application (CASA) provided by the Centers for Disease Control and Prevention. See related article on this page.
- Ability to generate immunization rates by provider or plan.

For additional information about MOHSAIC, or to request a provider packet, contact your local public health agency, the Department of Health's Section of Vaccine-Preventable and Tuberculosis Disease Elimination at (800) 699-2313 or the Center for Health Information Management and Epidemiology at (573) 751-6272.

New Polio Vaccine Recommendation

The Advisory Committee on Immunization Practices (ACIP) changed its recommendation on administering polio vaccine at its meeting October 21–22, 1998. Two poliovirus vaccines are currently licensed in the United States: inactivated poliovirus (IPV) vaccine and oral poliovirus (OPV) vaccine. The ACIP, the American Academy of Pediatrics and the American Academy of Family Physicians now recommend that the first 2 doses of poliovirus vaccine should be IPV. The ACIP continues to recommend a sequential schedule of 2 doses of IPV administered at ages 2 and 4 months, followed by 2 doses of OPV at 12–18 months and 4–6 years. Use of IPV for all doses also is acceptable and is recommended for immunocompromised persons and their household contacts.

OPV is no longer recommended for the first 2 doses of the schedule and is acceptable only for special circumstances such as: children of parents who do not accept the recommended number of injections, late initiation of immunization which would require an unacceptable number of injections, and imminent travel to polio-endemic areas. OPV remains the vaccine of choice for mass immunization efforts, which are conducted primarily outside of the United States in the effort to eliminate wild poliovirus.

If you have questions regarding polio vaccines, please contact your district immunization representative or the Section of Vaccine-Preventable and Tuberculosis Disease Elimination at (800) 699-2313.

Assessment of Immunization Rates

Vic Tomlinson
Wayne Fischer
Section of Vaccine-Preventable and Tuberculosis Disease Elimination

Approximately 70 percent of childhood immunizations in Missouri are now given in the private sector. As a result, the Missouri Department of Health is beginning to work with private physicians and other health care professionals to assure that children are appropriately immunized. A key strategy is to conduct Clinic Assessment Software Application (CASA) assessments in private provider practices to determine an immunization rate and to offer recommendations that may be helpful in raising that rate. Many physicians think that their rates are much higher than they actually are.

The department is starting with the 1,600 Vaccines for Children (VFC) providers in conducting these assessments. Other private providers will eventually be included. However, the nine department immunization representatives cannot accomplish this task alone. The department is asking for the help of its partners, such as managed care plans and local public health agencies, to make this initiative successful. Partners can assist in one or both of the following ways:

- Conduct assessments in private practices in collaboration with the immunization representatives.
- Be trained to provide these assessments without the assistance of the immunization representatives and then share the results with them.

The Department of Health will provide the training for CASA assessments. If you are interested in conducting these assessments or having them conducted in your practice, please call the Section of Vaccine-Preventable and Tuberculosis Disease Elimination at (800) 699-2313. Your support is very much appreciated.

Recommendations for Prevention and Control of Tuberculosis Among Foreign-Born Persons

Lynelle Phillips, R.N., M.P.H.
Section of Vaccine Preventable and Tuberculosis Disease Elimination

During 1986–1997, the number of tuberculosis (TB) cases among foreign-born persons in the United States increased by 56 percent, from 4,925 cases (22% of the national total) to 7,702 cases (39% of the national total). As the percentage of reported TB cases among foreign-born persons continues to increase, the elimination of TB in the United States will depend increasingly on the elimination of TB among foreign-born persons.

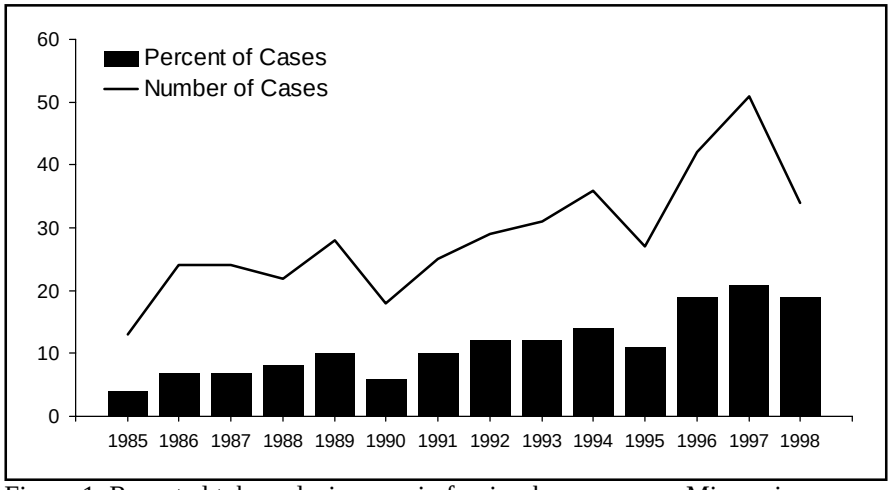


Figure 1. Reported tuberculosis cases in foreign-born persons, Missouri, 1985–1998.

On May 16–17, 1997, the Centers for Disease Control and Prevention (CDC) convened a working group of state and city TB-control program staff, as well as representatives from CDC's Division of TB Elimination and Division of Quarantine, to outline problems and propose solutions for addressing TB among foreign-born persons. The Working Group on Tuberculosis Among Foreign-Born Persons considered

a) Epidemiologic profiles of TB cases among foreign-born persons,
b) Case finding, screening, and preventive therapy for the foreign born,
c) TB diagnosis and management for the foreign born,
d) Opportunities for collaborations with community-based organizations (CBOs) to address TB among the foreign born, and
e) TB-related training needs.

The working group's deliberations and the resulting recommendations for action by federal agencies, state and local TB-control programs, CBOs, and private health-care providers were published as Recommendations for Prevention and Control of Tuberculosis Among Foreign-Born Persons—Report of the Working Group on Tuberculosis Among Foreign-Born Persons[1] in the Morbidity and Mortality Weekly Report, September 18, 1998, Vol. 47, No. RR-16. A copy of the full recommendations can be found at http://www.cdc.gov/epo/mmwr/preview/ind98_rr.html.

For each of the five topics of discussion, the working group identified key issues, problems, and constraints and suggested solutions in the form of recommendations, which are detailed in their report. The following is a summary of the working group's recommendations:

- The epidemiology of TB among foreign-born populations differs considerably from area to area. To tailor TB-control efforts to local needs, TB-control programs should develop epidemiologic profiles to identify groups of foreign-born persons in their jurisdictions who are at high risk for TB.
- The priorities of TB control among the foreign born should be the same as those for control of TB among other United States populations—completion of treatment by persons infected with active TB, contact tracing, and screening and provision of preventive therapy for groups at high risk. Screening and preventive therapy should be limited to areas where completion of therapy rates and contact-tracing activities are currently adequate.
- Based on local epidemiologic profiles, selective screening should be conducted among populations identified as being at high risk for TB. Screening should target groups of persons who are at the highest risk for TB infection and disease, accessible for screening, and likely to complete preventive therapy. The decision to screen for infection, disease, or both should be based on the person's age and time in the United States, prior screening, and locally available resources for the provision of preventive therapy.
- TB-control programs should direct efforts towards identifying impediments to TB diagnosis and care among local foreign-born populations, devising strategies to address these barriers, and maximizing activities to ensure completion of treatment.
- Providing TB preventive therapy and other TB-related services for foreign-born persons is often impeded by linguistic, cultural, and health-services barriers. TB-control programs can help overcome these barriers by establishing partnerships with CBOs and by

strengthening training and education efforts. Collaborations with health-service CBOs should center on developing more complementary roles, more effective coordination of services, and better use of existing resources for serving the foreign born. TB-related training should be linked to overall TB-control strategies for the foreign born. Training and education should be targeted to providers, patients, and community workers.

Missouri

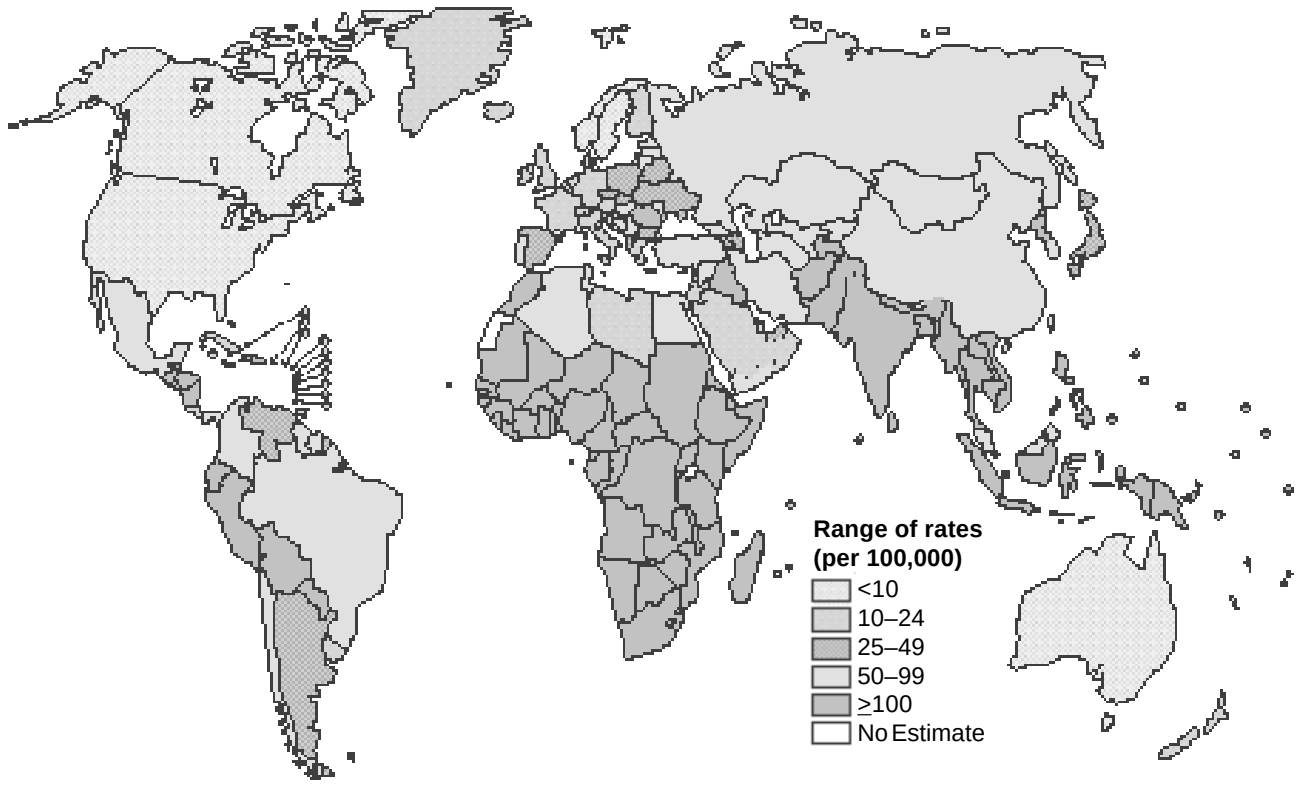
Data on TB incidence in Missouri's foreign-born mirror national trends. Missouri has seen disproportionate rates of TB in persons immigrating here from endemic countries. The number of foreign-born cases has also been steadily increasing, and reached an all time high in 1997. Foreign-born cases represented 21% (n=51) of the reported cases in 1997 and 18.6% (n=34) in 1998. See Figure 1. Asian/Pacific Islanders made up the majority of the foreign-born cases. Of note is the uncommon age distribution of foreign-born cases. Most cases (37%) occurred in the 25–44 year age group, rather than the 65–84 year age group seen in US-born cases. TB in younger adults is particularly significant in that it increases the likelihood of transmission to young children, as this age group coincides with the childbearing years. In addition, during the period 1993–1997, foreign-born Asians arriving in Missouri within the last five years in the 15–34 year and 55–74 year age groups had the highest rates of disease (45 and 87/100,000 person years, respectively).

Missouri has several recommendations for screening and treating tuberculosis in foreign-born from endemic countries. Consistent with CDC[2], Missouri's policy is to disregard history of BCG vaccination. It is not a contraindication to the Mantoux skin test, and if the result is 10 mm or greater in induration, this is considered to be positive, and the patient should receive a chest x-ray and be evaluated for infection treatment (generally, isoniazid for six months).

Recognizing that recent arrival to the United States from TB-endemic countries is a significant risk factor for the development of TB in foreign-born individuals, the Missouri Advisory Committee for the Elimination of TB (MACET) recommends that these individuals be considered high priority for TB screening and TB infection treatment.[3] Specifically, MACET recommends that foreign-born persons (including students, immigrants, and refugees), notably those from endemic

(continued on page 14)

Estimated Global Tuberculosis Incidence Rates, 1996



Tuberculosis Endemic Countries/Areas: Asia, Africa, Latin America, Eastern Europe (including Russia/Bosnia), Caribbean and Pacific Islands

Source of Map: World Health Organization Global Tuberculosis Programme, Global Tuberculosis Control WHO Report 1998. The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organizationconcerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines represent approximate border lines for which there may not yet be full agreement.

(continued from page 13)
countries, who have TB infection evident by a positive tuberculin reaction and who have been in the United States less than five years, receive TB infection treatment, **regardless of age**.

The American Academy of Pediatrics (AAP) recently revised their TB screening recommendations[4], and although routine screening of children is no longer recommended, AAP does recommend that foreign-born children, including those adopted from endemic countries, be screened with a Mantoux skin test. The tine test is no longer recommended by AAP because of poor sensitivity and specificity.

The Missouri Department of Health has recently made the following recommendations[5] for the state's university and college campuses:

1. As a condition of enrollment, all foreign-born students and faculty should be required to have a Mantoux skin test, and
2. As a condition of enrollment, all foreign-born students and faculty who are put on TB medications should be directly observed taking their medications through the student health center.

This strategy of directly observed therapy (DOT) is utilized for TB disease and infection to ensure compliance with taking the medication. The Department of Health has made these recommendations to address the fact that foreign students do not undergo TB screening as immigrants and refugees do. Also, the active TB cases that have been diagnosed on campuses have sometimes involved hundreds of contacts, due to their congregate setting.

We recognize that cultural barriers exist in persuading foreign-born individuals to undergo screening and treatment for tuberculosis, particularly if these clients have been BCG vaccinated. However, our experience indicates that they are indeed high-risk for tuberculosis, and warrant infection treatment if infected.

For more information and/or TB patient educational material in foreign languages, please contact the Section of Vaccine-Preventable and Tuberculosis Disease Elimination at (800) 611-2912.

REFERENCES:

1. Centers for Disease Control and Prevention. Recommendations for prevention and control of tuberculosis among foreign-born persons. MMWR 1998;47(RR-16).
2. Centers for Disease Control and Prevention. Core curriculum on tuberculosis: What the clinician should know 1994;Third edition.
3. MACET. Statement on preventive TB therapy in the foreign born. September 10, 1997.
4. American Academy of Pediatrics Committee on Infectious Diseases. Update on tuberculosis skin testing of children. Pediatrics 1996;97(2): 282–284.
5. Memo. MO Coordinating Board for Higher Education, Department of Education. Recommendations from the Department of Health for Tuberculosis Control. November 17, 1998.

Lyme Disease Vaccine Available

Susan Denny
Section of Vaccine Preventable and Tuberculosis Disease Elimination

On December 21, 1998, the Food and Drug Administration (FDA) licensed the first vaccine to aid in the prevention of Lyme disease, which is transmitted to people through the bites of ticks infected with the bacterium *Borrelia burgdorferi*. The new vaccine, with the trade name LYMErix, is approved for people aged 15 to 70 years.

Three doses of the vaccine are administered by intramuscular injection. The initial dose is follow by a second dose one month later and a third dose 12 months after the first.

Lyme disease is the most commonly reported vector-borne disease in the United States. Since the implementation of a standardized surveillance case definition in 1991, greater than 90 percent of cases have been reported from the northeast and north central United States. Persons of all ages are susceptible to infection, but the highest reported rates of Lyme disease occur in children aged less than 15 years and adults aged 30-59 years. Transmission peaks from April through July.

Although LYMErix may provide protection for the majority of people, it does not prevent all cases of Lyme disease, and it does not provide protection from other tick-borne diseases. Therefore, people should continue to take standard preventive measures against infection, including wearing protective clothing, using tick repellent and removing attached ticks.

It is not known whether this vaccine would have any efficacy against the "Lyme-like" disease seen in many parts of Missouri because the agent has not been positively identified and the new vaccine has not been tested for efficacy against this disease. Missourians do travel to places in the United States where the classic Lyme disease is transmitted, and this vaccine would be appropriate to provide protection for such travelers.

For information on the incidence of borreliosis in Missouri, see "Tick-Borne Disease Summary - 1997," in the May-June 1998 issue of the *Missouri Epidemiologist*.

For more information on Lyme disease, call the Section of Communicable Disease Control and Veterinary Public Health at (800) 392-0272. For more information on the Lyme disease vaccine, call the Section of Vaccine-Preventable and Tuberculosis Disease Elimination at (800) 699-2313.

Times Beach Dioxin Exposure Study

(continued from page 9)
resulted in the toxicity equivalence (TEQ). The TEQ was reported in parts per trillion (ppt) of TCDD in blood lipid. TEQ values decreased from 11.8 ppt to 8.21 ppt and from 10.82 ppt to 9.05 ppt in the study and comparison populations, respectively.

There were no differences in the average blood levels between the study and comparision groups for any analysis except 3,3',4,4',5P (PCB), which was slightly higher in the comparison population. No individual had results that were outside of normal background range for more than one chemical. In fact, none of the chemicals studied were at a serum level that was outside the range of values seen in the general population across the United States, except for octachlorodibenzo-p-dioxin, 1,2,3,4,7,8-hexachlorodibenzofuran, 1,2,3,6,7,8-hexachlorodibenzofuran, 1,2,3,4,6,7,8-heptachlorodibenzofuran and 3,3',4,4',5 PCB. In these cases, only one or two participants had blood levels outside of the background levels normally seen for any one of these five chemicals.

The results of this study clearly indicate that incineration of TCDD-contaminated soil and other material at the Times Beach incinerator did not result in any measurable exposure to the population surrounding the incinerator as indicated by the biomarkers TCDD and TEQ serum levels. These findings support the use of incineration for similar materials that are contaminated with dioxin-like compounds as long as the incineration is conducted in a similarly controlled manner with appropriate oversight.

If you have questions about the Times Beach Dioxin Incinerator Emissions Exposure Study, please contact Daryl Roberts or Scott Clardy in the Missouri Department of Health's Section for Environmental Public Health at (800) 392-7245.

Dr. Fazle Khan Joins Office of Surveillance

Fazle N. Khan, M.B.B.S., M.P.H., joined the Department of Health, Office of Surveillance as Epidemiology Specialist on November 16, 1998. He will be responsible for enhancing surveillance of vaccine-preventable diseases in the state. “As vaccine-preventable diseases (VPDs) become less prevalent, the role of surveillance has become more important. We’d like to make sure that the lowered incidence of VPDs reported in Missouri is indeed due to a true decrease in incidence and is not a decrease due to non-reporting or lowered reporting,” Khan said.

Dr. Khan is a native of Bangladesh. He received his medical degree from Mymensingh Medical College, Dhaka University, in 1982. After completing his internship, he worked as a physician in different rural and urban hospitals there. He earned a Diploma in Public Health from the National Institute of Preventive and Social Medicine, Dhaka University, in 1988, and then a Master's in Public Health from East Tennessee State University in 1992. Between 1992 and 1994, he worked as an epidemiologist for STD/AIDS in Augusta, Georgia. In September 1994, Khan joined the Idaho Department of Health and Welfare as Immunization Surveillance Specialist and was soon also appointed the Perinatal Hepatitis B Prevention Coordinator. In August 1998, he became the Primary Care Program Manager for the state. In November, he moved to Missouri to assume his current position with the Department of Health. Khan is married and has two children.

1997 Prenatal Drug Prevalence Study

(continued from page 4)
or more of the reviewed substances start prenatal care in the first trimester of pregnancy, and an additional 20 percent start care in the second trimester. For those using illegal substances, the corresponding percents are 64 and 18 respectively. Thus, for the majority of women using substances during pregnancy, there is time for assessment, education and appropriate referral. Missouri law requires that all prenatal care providers assess pregnant women for the risk and current use of alcohol, tobacco and other substances, and provide education regarding their effects on pregnant women and their fetuses. See sidebar. Verification of assessment and education must be documented in the prenatal record.

However, for there to be any significant decrease in substance use in pregnancy, there must be a decrease in the development of the habits. This means concerted efforts directed at children to not initiate these habits in the first place are needed.

REFERENCES:

1. State Center for Health Statistics. Missouri perinatal drug prevalence study. Missouri Monthly Vital Statistics1996;30(5).
2. State Center for Health Statistics. Maternal smoking trends in Missouri: 1978–1997. Missouri Monthly Vital Statistics1998;32(6).

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The Managing Editor is H. Denny Donnell, Jr, MD, MPH, State Epidemiologist. Production Manager is Diane C. Rackers. Questions or comments should be directed to (573) 751-6128 or toll free (800) 392-0272.

Alternate forms of this publication for persons with disabilities may be obtained by contacting the Missouri Department of Health, Office of Epidemiology, P.O. Box 570, Jefferson City, MO 65102-0570, Ph: (573) 751-6128. TDD users can access the preceding phone number by calling (800) 735-2966.

Reporting Children Taken From Former Methamphetamine Labs

Illegal meth lab sites are properties that were used for making methamphetamine. Typically, meth labs can be found in houses, apartments, motel rooms, sheds or even vehicles. The production of methamphetamine requires a lab-like setting with heat sources, laboratory equipment and many chemicals including sulfuric acid, ether, sodium hydroxide, lantern fuel (or some other hydrocarbon source), red phosphorus, anhydrous ammonia, acetone and others. The number of meth labs in Missouri has increased dramatically in recent years. Approximately 600 labs were seized in 1997. That number increased to approximately 900 labs in 1998. These labs are found in both metropolitan and rural areas.

The rising number of meth labs in Missouri has resulted in many public health issues, one of which is suspected adverse health effects due to exposure to these chemicals by children (defined as persons <17 years of age) taken from meth labs. Due to the rising number of meth lab seizures, the Missouri Department of Health, Section for Environmental Public Health is requesting assistance from the medical community. In an effort to assess how many children are being affected by exposure to these chemicals, the department is asking hospitals or physicians to report any children they treat who have been, or are suspected of having been, exposed to a meth lab or meth lab chemicals.

Reports can be made to the Department of Health on the standard Disease Case Report (CD-1) form, by phone at (800) 392-7245 or by fax at (573) 526-6946.

If you have questions on reporting, please contact Lori Harris or Scott Clardy at (800) 392-7245.

Missouri EPIDEMIOLOGIST

Volume 21, Number 2 *March-April 1999*

Tuberculosis: Public Health Threat of the Past, Present and Future

Written by William C. Banton, II, M.D., M.P.H., F.C.C.P., past president of the St. Louis Metropolitan Medical Society, retired pulmonologist and public health specialist and present chairman of the Missouri Advisory Committee for the Elimination of Tuberculosis. Reprinted with permission from St. Louis Metropolitan Medicine, February 1999 with minor edits.

Tuberculosis (TB), the airborne communicable disease that has cloaked planet earth for over 7,000 years, remains a major public health problem worldwide. Without the allocation of appropriate funds for TB education and research at all levels of government—federal, state and municipal—TB will continue to remain a major public health threat well into the future.

Tuberculosis remains the leading cause of death worldwide from communicable diseases. Worldwide, every year, three million persons die of TB and four million new active cases occur. At any one time, there are still approximately 15–20 million TB cases worldwide.

Although TB is now preventable and curable, there continues to exist a vast global reservoir of TB-infected persons that is the source of most future TB cases—worldwide, 1.5 billion persons; nationally, 15 million persons; and in Missouri, there are 250,000 such persons.

For the past five consecutive years, TB cases in the United States have declined. Nationally, cases decreased by 7 percent from 1996 to 1997 (21,337 cases to 19,855). However, in Missouri and some other states in 1997, cases increased (in Missouri, from 224 to 248, an increase of 10 percent). This occurred after experiencing a steady decrease since 1990 when 312 cases were reported. With the decrease in cases nationally, the politicians have already begun to decrease federal funding for TB. We witnessed the same reaction in the '70s and '80s when TB decreased nationally. The result, TB resurged in the latter '80s and '90s. We never seem to learn our lesson. Some of those factors that caused the recent resurgence are still there.

- Increased immigration, international business, and student trainees from countries where TB is highly prevalent. (Foreign born TB cases in Missouri have increased from 5.8 percent of all active cases in 1990 to 21 percent in 1997. Nationally, the foreign born constitute 39 percent of all TB cases in 1997.)
- Increases in the elderly U.S. population with activation of latent TB infection (40 percent of Missouri's TB cases are in the age group over 65).
- A continuing HIV problem, although at present, a relatively small one for Missouri (only 4 dual cases of TB/HIV disease in 1997).
- Increases in the number of "congregate setting institutions"—e.g., correctional facilities, nursing homes, homeless shelters, etc., where TB has a greater chance of airborne transmission.
- Increases in racial and ethnic minority populations. (African-Americans, Asians and Hispanics had 48 percent of all TB cases in 1996, 54 percent of all TB cases in 1997.
- The deterioration of the public health care infrastructure due to decreased funding. This situation was corrected by the mid '90s, but again, present and future funding is already decreasing.

Fortunately, Missouri has had a very active TB control consciousness existing among volunteers and staff of the American Lung Association (ALAEM) of Eastern Missouri and American Lung Association of Western Missouri (ALAWM). They never relinquished dedication to the goal of fighting TB. After all, the American Lung Association

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Inside this Issue...

(continued from page 1)
was founded in 1904 to combat TB which, at the time, was the number one cause of death in the United States.

In 1987, Missouri became the first state to establish a strategic plan to eliminate TB. This plan was designed by the Missouri Advisory Committee for the Elimination of TB (MACET) which is a subcommittee of the ALAEM-ALAWM's joint conference committee. MACET is comprised of a diverse group of TB experts and TB advocates. The implementation of this plan has been carried out by MACET, in partnership with the TB Control Unit of the Missouri Department of Health. To achieve TB elimination, this partnership team of MACET and Department of Health TB Control continues to work with all of the Missouri local health departments, private physicians, hospitals, schools, high-risk groups and many other diverse agencies.

The implementation of the MACET Strategic Plan began in 1990, the year Missouri reported 312 cases. Since then, there was a gradual downward trend in the number of TB cases in Missouri. So, naturally, there was cause for concern with the 10 percent increase in cases (248) in 1997, compared with 224 cases in 1996. Was this a statistical blip on the screen, or did we have a serious new problem on our hands? After reviewing the statistical and demographic data of 1997, and noting the same data thus far in 1998, it would appear that 1997 was a "blip on the screen for Missouri."

Looking at the statistical projections for 1998, it appears that we will close out the year with about 180 cases. It is quite possible that by the year 2000, we will achieve our interim TB elimination goal of 175 cases for a case rate of 3.5 cases per 100,000 population. Case rate for the United States in 1997 was 7.4 and 4.7 for Missouri.

Four of the basic action steps essential for the success of the strategic plan are:

- To insure that all TB suspects and TB cases promptly initiate therapy with four drugs (INH, RIF, PZA, and EMB or SM). Only 50.6 percent of all TB cases achieved this goal in 1995. By 1997, the rate increased to 75 percent.
- To insure that all cases complete the ATS/CDC therapy protocol of no less than 6–12 months (90.2 percent achieved this goal in 1996).
- To insure that all active TB cases receive Directly Observed Therapy (DOT) (58.4 percent of all cases achieved this goal in 1995, and by 1997, 76.6 percent were on DOT).
- To insure identification and examination of all close contacts (highest risk group), and treatment of all found positive for TB infection.

These basic action steps reduce TB transmissibility and the chances for development of both single- and multi-drug resistance.

Drug resistant TB, if not contained, will represent the communicable disease plague of the future. A recent survey by the World Health Organization revealed that drug resistant TB strains occurred in all 35 countries and regions studied, with an overall 12.6 percent of patients resistant to one of four drugs routinely used to treat TB, and 2.2 percent were resistant to two or more of these drugs. The United States in 1997 reported 7.6 single-drug and 1.3 percent multi-drug resistance. Drug resistance TB cases now have been reported in almost every state in the United States. Missouri had a single-drug resistance rate of 7.5 percent and a multi-drug resistance rate of 2.2 percent in 1997.

As we approach TB elimination (World Health Organization definition of elimination is one case per 1,000,000 population) in Missouri, it is essential to have continuing programs of TB Awareness (Think TB) to alert and update the public and the medical profession about this major public health problem that is preventable and curable.

In Missouri, MACET, in cooperation and conjunction with TB control units of the state and local health departments, have sponsored TB Awareness programs annually since 1985. In 1999, a TB Awareness Program was held March 13-23, 1999, with proclamations from the governor and local chief executives. There was a buffet TB Physician Seminar on March 25, 1999, at Ces & Judy's, 10405 Clayton Rd., St. Louis. The keynote speaker was Patricia M. Simone, MD, chief of the Field Services Branch, Division of Tuberculosis Elimination, Centers of Disease Control and Prevention. A panel presented a TB update, including the status of TB in St. Louis city and county.

MACET requested that during the months of March and April 1999, all Missouri hospitals provide one Grand Rounds or staff meeting on tuberculosis as their contribution to TB awareness.

It is important to reduce the reservoir of persons with TB infection to prevent activation of TB disease. Part of the Missouri strategic plan is to detect the high-risk members of this reservoir by routine medical practice and screening programs, and then treat those that are positive for TB infection. Missouri is one of four states that statutorily requires the reporting of TB infection, as evidenced by a positive P.P.D. tuberculin skin test.

For us to eliminate this disease, we must have the cooperation of many community groups, in addition to the ALAEM, ALAWM, DOH and local health departments. We particularly need the cooperation of physicians in the private sector to "Think TB," and treat TB disease and infection promptly with modern anti-TB drugs for 6–12 months. And certainly, we must continue to maintain the TB public health infrastructures throughout the state for the surveillance and management of TB.

Editorial Note: The final case count for tuberculosis in 1998 is 184 cases. If you have questions about tuberculosis, please contact the Section of Vaccine-Preventable and Tuberculosis Disease Elimination at (800) 611-2912.

New Tuberculosis Guidelines Call for Tuberculosis Screening and Treatment of All HIV-Infected Individuals

Reprinted with permission from the Epidemiology Newsletter, December 1998 published by the Bureau of Epidemiology, Utah Department of Health.

All HIV-infected individuals should be screened for tuberculosis (TB), and if infected with TB should be provided treatment to prevent the development of active TB disease. However, both preventive and curative TB treatment regimens for HIV-infected people must be carefully evaluated to ensure that they do not cause serious drug interactions with the latest therapies for HIV. New guidelines from the Centers for Disease Control and Prevention (CDC) outline in detail the proper evaluation and treatment of TB in HIV-infected individuals.

According to the guidelines, published in the *Morbidity and Mortality Weekly Report Recommendations and Reports*, October 30, 1998, Vol. 47, RR-20, the most important consideration is to avoid the use of one of the most popular TB drugs, rifampin, in combination with protease inhibitors or non-nucleoside reverse transcriptase inhibitors (NNRTIs), two of the latest available treatments for HIV infection. Rifampin can seriously impair the effectiveness of these antiretroviral therapies.

While HIV-infected individuals previously had to stop taking their HIV medications until TB therapy could be completed, another drug (rifabutin) allows continuation of both regimens. Rifabutin provides the first alternative to rifampin and should generally be used instead of rifampin in all patients taking either protease inhibitors or NNRTIs. Additionally, because of potential side effects and concerns about drug-resistance, health care providers should provide directly observed therapy (DOT) to HIV-infected individuals and carefully monitor them for adverse side-effects and progress.

In addition to avoiding drug interactions, providers can now offer HIV-infected individuals new short-course regimens for preventive treatment. Recent studies have found that a two-month course of multi-drug therapy to prevent active TB is an effective alternative to the year-long regimen of isoniazid previously prescribed for people co-infected with HIV and TB. The shorter regimen is easier to comply with and limits the time patients have to adhere to both TB and HIV regimens.

Critical Need for TB Prevention Among HIV-infected

The guidelines also underscore the importance of identifying TB infection among people with HIV. Because HIV infection so severely weakens the immune system, people infected with both HIV and TB have a 100 times greater risk of developing active TB disease and becoming infectious to others, compared to people not infected with HIV. Early diagnosis and effective treatment of TB among HIV-infected persons is critical to cure TB disease, minimize the negative effects of TB on the course of HIV, and interrupt the cycle of transmission to others. The CDC guidelines therefore recommend that all HIV-infected individuals be tested for TB infection and that all individuals being treated for TB be counseled and tested for HIV.

TB is an airborne, potentially fatal lung disease that now kills more people worldwide than any other infectious disease. Worldwide, TB accounts for one-third of deaths among HIV-infected individuals. It is critical for the optimal treatment of both diseases, that health care providers be familiar with and implement the new TB screening and treatment guidelines for individuals with HIV. Moreover, continued efforts to eliminate TB as a public health problem will be essential to reduce its toll overall and among HIV-infected populations.

Copies of the recommendations can be obtained from the NCHSTP Office of Communications by calling (404) 639-8063, or you can download the document from the Division of TB Elimination Web site at **http://www.cdc.gov/nchstp/tb.**

If you have questions regarding these guidelines or other tuberculosis issues, please contact the Section of Vaccine-Preventable and Tuberculosis Disease Elimination at (800) 611-2912.

Continuing Medical/Nursing Education

Continuing Medical Education (CME) and Continuing Nursing Education (CNE) components are available in the paper and electronic versions of the October 30, 1998, MMWR Recommendations and Reports (Vol. 47, RR-20), Prevention and Treatment of Tuberculosis Among Patients Infected with Human Immunodeficiency Virus: Principles of Therapy and Revised Recommendations.

CDC designates this educational activity for a maximum of 2.0 hours in category 1 credit toward the American Medical Association's Physician's Recognition Award. CDC designates this educational activity for a maximum of 2.4 contact hours of CNE credit.

To register and to receive credit, physicians and nurses must return their responses either electronically to the World-Wide Web site http://www.cdc.gov/epo/mmwr/mmwr.html, then go to Continuing Education Program for Physicians and Nurses, or by a card or letter postmarked by October 30, 1999. There is no fee for participating in this continuing education activity.

CME and CNE components are planned for future MMWR Recommendations and Reports.

Programs to Improve the Food Safety System

Lyn C. Konstant, Ph.D., R.D.
Division of Environmental Health and Communicable Disease Prevention

Each year, millions of persons in the United States experience foodborne illness, though only a fraction seek medical care and an even smaller number submit laboratory specimens. Foodborne illness remains prevalent in part, because food preparers and handlers at each point in the food chain are not fully informed of risks and related safe-handling practices. Understanding and practicing proper food-safety techniques, such as thoroughly washing hands and cooking foods to proper temperatures, could significantly reduce foodborne illness.

Although food preparation and storage conditions have improved, new food safety concerns have arisen. These critical issues in food safety include:

- emerging pathogens such as multi-drug resistant *Salmonella typhimurium* strain DT 104, *E. coli* O157:H7 and *Campylobacter jejuni*;
- new technologies which allow more rapid processing of meats and poultry and development of new products with different chemical structures that may support the growth of food pathogens;
- globalization of industry and trade, especially since illnesses cross state borders, and most foods or food ingredients are processed or produced in another state or by international trading partners;
- increasing food imports of products which may enter this country daily with limited scrutiny from areas of the world that do not have to follow a uniform set of food safety standards;
- competing priorities and limited resources that constrain the ability of agencies to implement active surveillance and control/education programs; and
- increasing demands for more uniformity and consistency in standards for food products.

Based on provisional data, there were over 1,400 cases of foodborne illness reported in Missouri in 1998. Nearly 80 percent of the reported cases were due to Salmonella and Campylobacter, two of the most common causes of foodborne disease. Rates of both diseases have declined moderately since 1994.

Nationally, preliminary data released in March 1999 by the Centers for Disease Control and Prevention (CDC) also show a decline in the overall incidence of Salmonella and Campylobacter in the seven sites that participate in the Foodborne Diseases Active Surveillance Network (FoodNet).[1] The data show a 14 percent decline in the number of Salmonella infections between 1996 and 1998 and a 14 percent decline between 1997 and 1998 in the number of illnesses caused by Campylobacter.

Because there are many causes of foodborne illness, many points at which foods can become contaminated, and many factors that make some groups of people more susceptible than others, no single preventive measure will ensure the safety of all foods.

National Food Safety Efforts

Six agencies in the federal government have primary responsibility for food safety: the Food and Drug Administration (FDA) and CDC, both agencies of the Department of Health and Human Services (DHHS); the Food Safety and Inspection Service (FSIS), the Agricultural Research Service (ARS) and the Cooperative State Research, Education and Extension Service (CREES), all agencies of the United States Department of Agriculture (USDA); and the Environmental Protection Agency (EPA).

In January 1996, the Foodborne Disease Active Surveillance Network (FoodNet) was established. FoodNet is a collaborative effort among FSIS, FDA and CDC along with selected state and local health departments who began collecting data to better track the incidence of foodborne illness and monitor the effectiveness of food safety programs in reducing foodborne illness.

In January 1997, President Clinton announced the National Food Safety Initiative, a five-point plan to strengthen and improve food safety for the American people and a new early warning system, the Foodborne Outbreak Response Coordinating Group (FORC-G). This partnership of federal and state agencies is to develop a comprehensive, coordinated national foodborne illness outbreak response system among federal, state, and local agencies.

In May 1997, a $43 million Food Safety from Farm to Table initiative provided funding through USDA for measures to improve surveillance, outbreak response, education and research. In October 1997, the Partnership for Food Safety Education was established. The Partnership has launched a multi-year, broad-based public education campaign, Fight BAC! (See sidebar.)

In May 1998, a national computer network of public health laboratories, called PulseNet, was formed to help rapidly identify and stop foodborne illness. The new system enables epidemiologists to respond up to five times faster than before in identifying serious and widespread food contamination problems by performing DNA "fingerprinting" on foodborne pathogens. The Joint Institute of Food Safety Research, created in July 1998, will develop a strategic plan for conducting and coordinating all federal food safety research activities.

Clinton created the President's Food Safety Council in August 1998. This Council, with representatives from USDA, FDA, CDC and EPA, was charged with developing a comprehensive

strategic plan for federal food safety activities and with ensuring that these agencies work together to develop coordinated food safety budgets each year.

The Council planning process began in Kansas City in September 1998. Attendees from 50 states discussed a vision for food safety in the future, identified obstacles and recommended action items including the formation of work groups to further develop the ideas. The vision includes:

- joint planning;
- sharing resources,
- data and communication systems;
- redeploying inspection efforts based on risk and science;
- adopting uniform standards for industry and government;
- enhancing the surveillance and detection of outbreaks from food-borne diseases;
- coordinating government response to outbreaks; and
- educating the public in safer food handling and preparation.

An 18-member Coordinating Committee was named with representation of agriculture, health and epidemiology disciplines from federal, state and local agencies. Six work groups were developed for the following areas:

- Roles and Responsibilities—Capacity and Resource Needs;
- Coordinating Outbreak Responses and Investigations;
- Information Sharing and Data Collection;
- Communication;
- Minimum Uniform Standards; and
- Laboratory Operations and Coordination.

The work groups began meeting in October 1998. The goal is to develop a comprehensive plan to guide budget requests for the federal Food Safety Initiative over the next decade.

Fight BAC!

A variety of educational materials and electronic artwork are available through the Fight BAC! web site at **http://www. fightbac.org**. The Fight BAC! brochures are available in English and Spanish. Click on the "Spread The Word" icon for ordering information.

Fight BAC! brochures (black and white version only) can also be obtained from the Department of Health by contacting the Section for Environmental Public Health, P.O. Box 570, Jefferson City, MO 65102-0570, Ph: (800) 669-7236.

A web site "**http://www.FoodSafety. gov/**" has been developed where government food safety information can more easily be accessed. The site provides links to food safety-related web sites from federal, state and local government agencies. The site was developed by the Center for Safety and Applied Nutrition, FDA, in consultation with the Food Safety Inspection Service, USDA.

The Food Safety Consortium, which consists of researchers from the University of Arkansas, Iowa State University and Kansas State University, has a web site that includes links to food safety information from government agencies, academic institutions and industrial organizations. It can be accessed at **http://www.uark.edu/depts/fsc/othersites.html**. The types of information that can be accessed through this site include: databases; research; academic institutions and national centers; industries and associations; medical sites; and discussion groups.

Increased vigilance by producers, processors and handlers is one factor in food safety. Hazard Analysis Critical Control Points (HACCP) programs are being implemented throughout the animal industry to address all aspects of food safety. What consumers do with the food after they purchase it is another important factor. Proper refrigeration, storage, preparation and clean-up in the home kitchen is critical to reducing foodborne illness. Decreasing foodborne illness requires behavior changes of all involved in the farm to table continuum.

Missouri Food Safety Efforts

In Missouri, a food safety team has been formed with representatives from the Departments of Health (DOH) and Agriculture (DOA), the University of Missouri Colleges of Agriculture, Food, and Natural Resources and Veterinary Medicine and the University Extension Service. Joint activities have been undertaken to: improve communication among agencies and with industry groups; enhance education of consumers, food service workers and inspectors; improve coordination and

(continued on page 6)

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information flow for outbreak detection and response; increase availability of technical assistance for producers and processors; meet the challenges of implementing Hazard Analysis Critical Control Points (HACCP) in new settings; and coordinate funding requests.

The team has undertaken several joint activities to address food safety issues. In December 1997 a first-ever Food Safety Collaborative Workshop was held in Columbia. Over 50 representatives from industry, education and government worked together to draft vision and mission statements and to develop plans in the areas of research, collaboration, training, consumer education and economic value.

After the workshop, a Memorandum of Understanding (MOU) was developed by the team and signed by the directors of the departments of Health, Agriculture, Elementary and Secondary Education, Economic Development, Natural Resources, Missouri University and Lincoln University. The MOU specifies how these departments and institutions of higher education will work together to insure that Missourians produce and consume food that is known for its safety, quality and value.

The food safety team meets bi-monthly to address areas of mutual interest. Both DOH and DOA have included objectives and strategies within their strategic plans aimed at food safety issues and have brought resources to bear to address them.

The Department of Health has:

- increased foodborne disease surveillance and risk management capabilities by dedicating a staff person to develop systems to collect/analyze environmental and foodborne illness data, and through increased capacity of the State Public Health Laboratory to identify and characterize outbreaks;
- increased food processor inspections by devoting additional staff time to providing technical assistance to assure compliance; and
- updated and strengthened the legal structure of food regulation through review of the 1999 FDA model food code and development of updated rules that give Missouri a more science-based approach to food safety.

The Department of Agriculture has undertaken specific actions to:

- address public concern about environmental and food safety issues through improved quality of Missouri-produced meat and milk products;
- ensure consumer confidence in Missouri's food products through consistent and comprehensive regulatory enforcement; and
- improve the production and delivery of wholesome meat products through increased education and outreach, training and collaboration with USDA/FSIS and FDA to assure implementation of federal food safety standards in smaller meat slaughter and processing plants.

REFERENCE:

1. CDC. Incidence of foodborne illnesses: Preliminary data from the foodborne diseases active surveillance network (FoodNet) - United States, 1998. MMWR 1999;48:189–94.

VIDEOCONFERENCES in 1999

The Section of Vaccine-Preventable and Tuberculosis Disease Elimination will sponsor the following Centers for Disease Control and Prevention (CDC) satellite broadcasts:

Immunization Update

September 16, 1999

This program will provide the most current information available in the constantly changing field of immunization.

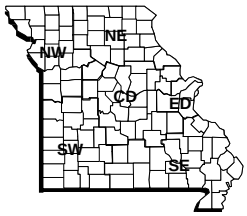
Surveillance of Vaccine-Preventable Diseases

December 2, 1999

This program will provide guidelines for vaccine-preventable surveillance, case investigation and outbreak control.

These live, interactive satellite videoconferences feature question and answer sessions in which participants can address questions to the course instructors on toll-free telephone lines. Continuing education credits will be offered for a variety of professions.

For more information about the courses, site locations and times, contact the immunization representative located in your district health office or the Section of Vaccine-Preventable and Tuberculosis Disease Elimination at (800) 699-2313.



Missouri Department of Health
Division of Environmental Health and Communicable Disease Prevention

QUARTERLY DISEASE REPORT

Reporting Period*
July - September, 1998

	Districts											3 Month State Totals		Cumulative		
	CD	** ED	NE	** NW	SE	** SW	*** OTHER	Kansas City	St. Louis City	St. Louis Co.	Spfd. Greene Co.	1998	1997	For 1998	For 1997	5 YR MEDIAN
Vaccine Preventable																
Influenza	0	0	0	0	1	0		0	0	0	0	1	0	1074	227	227
Mumps	0	0	0	0	0	0		0	0	0	0	0	0	0	0	22
Pertussis	1	0	0	2	2	2		3	1	1	0	12	30	28	55	42
Measles	0	0	0	0	0	0		0	0	0	0	0	0	0	1	1
Viral Hepatitis																
A	5	7	0	56	20	22		20	12	8	38	188	307	539	863	902
B	2	4	0	9	2	7		11	18	5	3	61	66	188	259	334
C	2	14	0	4	0	0		24	0	1	1	46	4	86	6	N/A
Non-A Non-B	0	0	0	0	0	0		0	0	0	0	0	1	1	3	18
Unspecified	0	0	0	0	0	0		0	0	0	0	0	0	2	1	1
Meningitis																
Aseptic Meningitis	0	67	13	21	11	0		13	4	70	0	199	46	252	75	126
Meningococcal Disease	0	0	0	1	1	0		5	2	0	0	9	7	29	36	36
Meningococcal Other	1	0	1	2	0	0		0	1	2	0	7	4	37	43	N/A
Enteric Infections																
E. Coli O157:H7	5	0	1	7	3	1		1	0	6	1	25	27	37	45	30
Campylobacter	21	19	13	16	26	29		6	10	36	11	187	190	400	448	480
Salmonella	42	32	4	38	40	22		30	9	31	5	253	131	494	441	420
Shigella	5	6	0	4	3	1		4	9	14	1	47	59	98	184	362
Parasitic Infections																
Cryptosporidiosis	1	0	0	2	2	2		2	0	1	2	12	19	20	28	N/A
Giardiasis	25	40	3	31	25	21		18	55	63	7	288	259	565	545	512
Respiratory Diseases																
Legionellosis	0	0	0	1	0	2		0	2	3	1	9	4	19	7	13
Sexually Transmitted																
AIDS	5	2	0	7	1	4	3	20	45	25	1	113	147	334	349	194
HIV infection	3	2	1	3	7	4	0	30	41	24	1	116	103	334	310	-
Chlamydia	358	122	87	338	212	247		797	763	684	****	3608	-	9253	-	-
Gonorrhea	141	25	20	116	85	56		635	910	492	****	2480	1817	6632	5542	-
P&S syphilis	2	0	0	0	7	0		0	11	4	****	24	40	81	91	-
Tuberculosis																
Active Disease	4	0	1	1	1	1		5	10	3	1	27	41	121	168	-
Zoonotic																
Ehrlichiosis	3	0	1	1	0	1		1	0	3	0	10	15	11	15	N/A
Lyme-like Disease	0	0	0	0	0	0		0	0	0	0	0	4	0	15	41
Rabies (Animal)	0	0	0	0	2	1		0	0	0	0	3	10	22	22	23
Rocky Mountain Spotted Fever	0	0	0	1	0	2		0	0	0	0	3	12	6	22	14
Tularemia	0	1	4	1	1	0		0	0	1	0	8	6	12	11	14

Outbreaks
Foodborne - 5
Waterborne
Nosocomial - 1
Pediculosis
Scabies - 2
Giardia
Hepatitis A
Shigella
Other

Low Frequency Vaccine Preventable Diseases
Diphtheria
Hib Meningitis
Hib other invasive
Polio
Rubella
Tetanus

Low Frequency Diseases
Anthrax
Botulism
Brucellosis - 2
Chancroid
Cholera
Encephalitis
Granuloma Inguinale
Kawasaki Disease - 6
Leptospirosis
Listeria - 3
Lymphogranuloma Venereum
Plague
Psittacosis
Rabies (human)
Reye syndrome
Rheumatic fever, acute
Streptococcal Disease, Invasive, Grp A - 2
Streptococcus pneumoniae, Drug Resistant Invasive Disease
Toxic Shock Syndrome
Trichinosis
Typhoid Fever - 1

*Reporting Period Beginning June 28 and Ending October 3, 1998.
**Totals do not include Kansas City, St. Louis City, St. Louis County, or Springfield
***State and Federal Institutions
****Included in SW District
- Data unavailable

Due to data editing, totals may change

TEAR OUT FOR FUTURE REFERENCE

IMPORTANT NOTICE

Acute Hepatitis A and B Markers Not Included in the Hepatitis Panel Within the 1999 Current Procedural Terminology (CPT) Manual

Caryl Collier, R.N., M.P.H., C.I.C.
Division of Environmental Health and Communicable Disease Prevention

In laboratories that follow Health Care Financing Administration (HCFA) reimbursement regulations, current CPT language regarding viral hepatitis laboratory testing may lead to delays in the diagnostic process, delays in initiating therapeutic and control measures, and delays in reporting of disease to health departments.

Immunoglobulin M (IgM) tests for acute hepatitis A and acute hepatitis B have not been included in the hepatitis panel within the 1999 Current Procedural Terminology (CPT) Manual. The acute phases of these diseases will not be identified if the panel is ordered as written in the manual. The Missouri Department of Health suggests that physicians, advance practice nurses, infection control professionals and public health professionals be alert to this problem and suggests the following solutions as temporary measures to overcome the problem.

1. Order IgM tests concurrently with hepatitis panels or, in lieu of panels, order the two IgM's, plus HbsAg, and anti-HCV; i.e., an ad hoc acute panel**.**
2. Request laboratories to design their requisition forms to clearly indicate the conditions under which reflex testing will be performed. Reflex testing occurs "when initial test results are positive or outside normal parameters and indicate that a second related test is medically appropriate". Laboratories may want to do the same for confirmatory testing. Laboratory requisitions should be revised to reflect clear indications to the ordering physician as to when reflex testing will be done; e.g., if the first or primary test is positive (this would be required only if the laboratory bills for the successive reflex testing).
3. Another solution would be for HCFA to include in their quarterly update an alphanumeric replacement code for a revised hepatitis panel that overrides the current CPT-coded panel, #80059. We understand that this is being discussed at the federal level.

This problem developed as a result of changes in the HCFA reimbursement procedures in the CPT Manual made in 1998 for hepatitis A IgM (IgM HAV) and hepatitis B IgM core (IgM HBc). Laboratories are no longer able to bill for these acute hepatitis markers as part of the hepatitis panel # 80059. The tests covered in the panel and reimbursable by Medicare and Medicaid are the total antibody for hepatitis A (IgM and IgG combined) and the total core antibody for hepatitis B (IgM and IgG combined). HCFA requirements for ordering the hepatitis panel and other acute markers include documentation that the tests are medically necessary. Each test must have justification in writing or the necessity for the test must be obvious in the medical record. In the absence of justification or documentation of medical necessity, there is no allowance for reflex testing.

If the physician believes the patient is acutely ill with hepatitis A or hepatitis B, separate tests must currently be ordered *along* with the panel or *subsequent* to getting the results on the total antibody tests. If the physician waits until the panel results are available, there will be considerable delay before requesting the IgM's for both hepatitis A and B. Consequently, there will be delay in providing prophylaxis to the contacts of these infectious cases and in instituting other prevention and control procedures. Prevention initiatives include instructing the infectious cases in how to prevent transmission of the hepatitis A or B virus to other significant contacts in sexual encounters and in home or work settings.

The problem of the hepatitis panel not covering acute markers will eventually be resolved. The CPT Board met in November of 1998 and decided to allow for an acute hepatitis panel in the next edition of the CPT Manual expected in the year 2000.

If you have questions, please contact the Division of Environmental Health and Communicable Disease Prevention at (573) 751-6079.

HIV in the African American Community

A State of Emergency Response Plan

At the United States Conference on AIDS, the Congressional Black Congress announced a State of Emergency in the United States regarding HIV infection rates in African American communities. After reviewing the staggering statistics, it became apparent that the Missouri Department of Health should proactively develop a response plan for the state of Missouri.

This response plan is the result of the Department of Health's collaboration with community partners, other state agencies, and local health departments. This document is intended to assist community based organizations and other entities to develop strategies in response to HIV in the African American community. The document is designed to be customized at the local level to enable these organizations to add their mission and role to enhance their efforts in HIV prevention. The response plan is meant to complement other interventions that have proven effective in the prevention of HIV. In order to leave no one behind, it is imperative that efforts are made at the community level to develop strategies for all Missourians.

VISION

A Missouri free of HIV and the devastating impact that it has on communities, families, and individuals.

GOAL

To reduce the incidence of HIV disease in minority communities, particularly African Americans, who are being hardest hit by the disease. To reduce the impact of HIV disease on minority communities, families, and individuals.

GUIDING PRINCIPLES

- ✔ Assistance is provided on the basis of objective need.
- ✔ Consumer choice is a priority.
- ✔ Access to integrated, state of the art HIV care is assured.
- ✔ Client trust and assurance of confidentiality is maintained.
- ✔ Multi-agency and community approaches are promoted.

OBJECTIVE: To assure that the neediest receive priority assistance

While much of the news on the HIV/AIDS front is encouraging overall, recent data indicate a disturbing trend in African American communities. While overall AIDS deaths are down, the disease remains a severe and ongoing crisis in African American and other racial and ethnic minority communities. According to the National Minority AIDS Council, AIDS is the leading killer of African Americans between the ages of 25 and 44. The largest percentage increases for HIV/AIDS are now among women and youth, racial and ethnic minorities, injecting drug users and their sexual partners.

Strategies

- Review the statewide Community Planning Group (CPG) and Regional Planning Group (RPG) plans for specific interventions planned and targeted to African Americans and submit written plans back to the regions helping them to strengthen their plans. Assure that an adequate portion of prevention and care money is appropriately targeted to African Americans and that funded programs are evaluated for effectiveness.
- Conduct health marketing research in African American communities.
- Continue focused education/outreach and screening programs targeted to African Americans.
- Maximize the screening, education, and outreach potential for Federally Qualified Health Centers, family planning clinics, and alcohol and drug clinics through additional or redirection of resources.
- Build on the CPG statewide plan and develop a comprehensive statewide assessment of need and long term strategic plan.
- Create a position of Minority STD/HIV Programs Coordinator in either St. Louis, Kansas City, or both, to develop and implement the statewide minority strategic plan.
- Develop studies geared to analyze the links between substance abuse, sexual behavior, STDs, and HIV infection rates in African Americans.
- Conduct outreach activities to Historically Black colleges and universities, churches, and high risk groups.
- The Department of Corrections will continue to liaison with external agencies to supply needed and appropriate referrals upon release of HIV positive offenders.
- In accordance with the Department of Mental Health's recommended guidelines, state-operated facilities will continue to identify signs and symptoms, conduct risk assessments, perform HIV testing (or make referrals for testing) and conduct pre/post-test counseling as appropriate.

OBJECTIVE: To assure client access to qualified providers

African Americans must have appropriate access to state-of-the-art HIV care and treatment with effective combination therapies and treatment for opportunistic infections.

Strategies

- Identify provider resources in underserved areas.
- Develop and implement a statewide quality management system for all funded STD/HIV/AIDS screening and counseling, prevention education and treatment programs.

- Conduct a survey to determine providers ability to diagnose and treat HIV and other sexually transmitted diseases.
- Provide education programs targeted to diagnosis, treatment, stigma, and cultural competence.
- Develop adequate referral services to qualified providers at hospital emergency rooms, Women, Infants, and Children clinics, etc.
- Increase provider knowledge of risk factors for HIV and other STDs including linkages with Infectious Disease Specialists in HIV/AIDS.
- Increase provider referral knowledge.
- Address stigma barriers.
- Place case managers on-site at provider sites.
- Develop centers for excellence.
- Develop/support credentialling for physicians who provide HIV care.
- Develop crisis response teams to assist in areas with high prevalence of HIV and STD infection. These teams will consist of a team of experts available to provide special skills and support to expand existing prevention and treatment services for African Americans, and to support development of strategies for enhancement.
- The Department of Corrections will require physicians, through continuing education, to adhere to the Centers for Disease Control and Prevention treatment guidelines.

OBJECTIVE: To address client trust and confidentiality issues

Many members of the African American community have held an underlying distrust of the traditionally white public health system, especially since the Tuskegee Syphilis Study. Adding to this are the persistent inadequacies in social benefits, health care, education, and opportunities for African Americans. Effective prevention programs must address these concerns.

Among African American men who have sex with men, including those who self-identify as gay, fear of homophobia and social norms of some minority communities may have been a source of internal conflict. At the beginning of the epidemic, the absence of national gay leaders and large gay constituencies in the African American population offered few opportunities to mobilize support.

Strategies

- Increase African American representation on the Governor's Council on AIDS through an Advisory Committee on African American issues
- Increase African American representation to the Statewide HIV Prevention Community Planning Group.
- Identify African American communities where lack of trust may exist.
- Engage the assistance of the Office of Minority Health.
- Encourage AIDS Clinical Trials Research at Minority Institutions.
- Utilize providers that have current and trust based relationships with the African American community.
- Engage identified community leaders to assist with trust and confidentiality issues.

- Hire/contract with representatives of the communities at risk including African Americans, HIV+, and those with multiple risk factors.
- Conduct outreach activities to Historically Black colleges and universities, churches, and high risk groups.
- Identify community leaders that have developed trust within African American communities and engage their assistance in prevention and care activities.
- Develop programs that assist in reducing the stigmatization and isolation experienced as a person living with HIV.
- Address factors that prevent disclosure of positive HIV status.
- The Department of Corrections will continue to practice confidentiality per policy and state and federal law.
- The Department of Corrections will continue to collaborate with state and community agencies.

OBJECTIVE: To assure cultural competence in addressing the diversity within African American communities

While African Americans are sometimes viewed as one group, there is, in fact, a wide variety of populations in Missouri included under this heading. Upper socioeconomic status, lower socioeconomic status, Christian, Muslim, inner-city, suburban, descendants of slaves, and recent Caribbean immigrants all fall into the African American heading. Current epidemiological surveillance does not record the social, cultural, economic, geographic, religious, and political differences that may more accurately predict risk.

Strategies

- Improve our surveillance systems to be more responsive to current trends in the different sub-epidemics rather than cumulative trends.
- In collaborations with churches, schools, and other community organizations, the prevention strategies should be introduced by trusted members of the community. Trust must be established, and fear replaced by knowledge.
- Adopt faith-based initiatives in African American churches to address HIV.
- The Department of Mental Health's Division of Alcohol and Drug Abuse will collaborate with grass roots organizations/agencies who provide HIV/AIDS awareness and education to twenty local high schools in Kansas City and to intravenous drug users in the city of St. Louis.
- The Department of Corrections will continue to liaison with state and community providers to gain insight into the diverse needs of varied populations.

OBJECTIVE: To assure better collaboration between State agencies

Strategies

- Enhance state agency collaboration to assure effective interventions and services.
- Increase state agency representation on Governor's Council on AIDS.
- Increase state agency representation on planning bodies for STD and HIV Prevention and Care.

OBJECTIVE: To increase the effectiveness of counseling and intervention services and disease surveillance

Strategies

- Conduct program technical assistance audit of state, federally, and locally funded counseling and intervention and disease surveillance by Local Public Health Agency.
- Review medical providers ability to provide counseling and intervention services.
- Review provider reporting efforts and design programs for improvement.
- Locate counseling and intervention specialists at provider sites visited by the populations most at risk—not just Local Public Health Agency STD clinics.
- Proactively design programs and strategies that encourage African Americans to become HIV testing counselors at HIV testing sites. In the future, it will become increasingly important for African Americans to identify with other African Americans when seeking HIV/STD testing.
- Develop health communication campaigns that show the efficacy of HIV testing in the African American Community.
- Conduct risk assessments for all individuals entering state and federally funded alcohol and drug treatment programs.
- Revise and update reporting requirements for alcohol and drug on-site testing facilities to include race/ethnicity, sex, and age.
- The Division of Alcohol and Drug Abuse will contract with a provider to conduct statewide HIV counseling training to alcohol and drug treatment programs.
- The Department of Mental Health, Division of Mental Retardation and Developmental Disabilities will educate service coordinators, nurses, and other appropriate staff regarding HIV and other STDs.
- The Department of Mental Health will make HIV/STD prevention information available to persons with developmental disabilities who are sexually active.
- The Department of Corrections will continue to monitor HIV+ offender education and treatment modalities to ensure optimum utilization of the most up to date knowledge base.
- HIV and AIDS reporting to the Department of Health is ongoing. This process shall be enhanced as necessary.
- The Department of Corrections will establish offender peer education HIV prevention pilot programs at each non-Institutional Treatment Center site.

OBJECTIVE: To assure comprehensive programs targeted to African American women

Over the past decade the epidemic has increased most dramatically among women of color. Even if women know how to protect themselves from HIV infection, awareness of the facts must be coupled with the skills and support needed to change behavior.

Strategies

- Assure access to female-controlled prevention methods and the skills to use them consistently and correctly.

- Integrate prevention and treatment services.
- Address the intersection of drug use and sexual HIV transmission.
- Integrate medical and behavioral HIV and STD prevention solutions.
- Provide comprehensive, integrated HIV care that addresses the entire spectrum of health care needs and reduces access barriers.
- Assure targeted health communication campaigns and risk reduction programs to African American women.
- Investigate the efficacy of less intrusive methods of HIV testing for women.
- Assure appropriate pre/post-test counseling, testing, and reporting for African American women in alcohol and drug treatment programs serving women and children.
- The Department of Corrections will continue to offer education to offenders through pre and post HIV testing, internal educational videos, handout materials, health fairs, and collaborative pre-release efforts with the Department of Health.
- Currently, all Department of Corrections Institutional Treatment Centers include a compulsory education topic of HIV and STDs and their relationship to substance abuse.
- The Department of Corrections collaborations with drug court contractors indicate a required HIV educational component and its relationship to substance abuse.

OBJECTIVE: To assure comprehensive programs targeted to African American youth

AIDS is the leading cause of death for African American men and women between the ages of 25 and 44. Many of these young adults likely were infected as teenagers. It is estimated that half of all new HIV infections in the United State are among people under 25, and a majority of young people are infected sexually.

Strategies

- Partnership with schools and the Department of Elementary and Secondary Education to integrate, preferably within the context of required comprehensive health education, school-based programs that include a focus on delaying sexual activity **and** to provide information on how sexually active young people can protect themselves.
- Develop partnerships with community parent groups to serve as advocates in the schools for more effective school based prevention programs.
- Partnership with communities and the Department of Corrections to assure the presence of community-based programs that address the needs of adolescents who are most vulnerable to HIV infection, such as homeless or runaway youth, juvenile offenders, and school drop outs.
- Develop targeted, sustained prevention programs for young gay and bisexual men.
- Address relationship between risky sexual behavior and drug-related risk.
- Develop ongoing evaluation of factors influencing risk behaviors and the impact of selected family, social, and cultural factors on risk-taking behaviors among youth and implement targeted health communication campaigns and risk reduction programs for African American youth.
- Offer youth specific HIV integrated, comprehensive care services.

- Partner with church youth outreach in to educate parents regarding talking with their children about sexual health.
- Continue to encourage Community 2000 teams funded by the Division of Alcohol and Drug Abuse to collaborate with the Department of Health in targeting HIV prevention education simultaneously with substance abuse prevention for adolescents.
- The Division of Alcohol and Drug Abuse will continue to disseminate HIV/AIDS awareness and education materials at primary substance abuse prevention workshops and conferences targeting adolescents.
- The Division of Alcohol and Drug Abuse will continue to fund the annual Teen Institute for the Deaf, a primary prevention program, which includes training for all participants through the Red Cross for HIV/STD Prevention.

OBJECTIVE: To assure comprehensive programs targeted to African American men

To compartmentalize African American men who have sex with men in sub-groups does not accurately address the complex issue of high-risk sexual behavior. Many African American men view themselves as sexual beings with no specific orientation marker.

Sexual identity for African American men who have sex with men can be highly situational and context-dependent. Men who have sex with men may identify as gay, bisexual, or heterosexual depending on interpersonal, familial, social, business, or sexual context. A key factor in this identification paradox is that many individuals associate HIV infection with gay-identified men. Men who have sex with men who do not identify as gay may see safer sex messages and communication efforts as irrelevant, and therefore, pose a challenge to targeted HIV prevention efforts.

Strategies

- Prevention Strategies for African American men who have sex with men must follow culturally specific guidelines and research. The strategies must be community based and culturally relevant, designed, and implemented by members of the African American men who have sex with men community.
- Develop targeted, sustained prevention programs for African American men who have sex with men who self identify as gay and bisexual, and prevention programs for those who do not.
- Address relationships between risky sexual behavior and drug-related risk.
- Provide capacity building for identified organizations and/or entities that address HIV/AIDS among African American men.
- Continue focused education/outreach and outreach testing to African American men.
- Develop programmatic strategies that build self-esteem, reinforce positive identity, and instill a sense of respect for self, others, and the community.

If you have questions regarding this plan, please contact Elisa Daues in the Section of STD/HIV/AIDS Prevention and Care Services at (573) 751-6144.

Facts About *E. coli* O157:H7

F.T. Satalowich, D.V.M., M.S.P.H.
Division of Environmental Health and Communicable Disease Prevention

The human large intestine is known to contain over 600 known organisms. *E. coli* is present in the large intestine of all mammals including man. Although the organisms are present, disease and or illness usually do not occur. Disease occurs when an imbalance of the flora occurs or when the host is stressed. Some of the *E. coli* are more pathogenic and virulent than others. Out of the hundreds of strains of *E. coli* that exist in nature and in the bowel of man and animal, *E coli* O157:H7 produces a powerful toxin and can cause severe illness. Of the individuals affected by *E. coli* O157:H7, about two to seven percent of infections lead to hemolytic uremic syndrome.

E. coli present in the bowel are passed in the feces and are present on all material or surfaces contaminated by fecal material, including soil, for a prolonged period of time.

Infection with *E. coli* O157:H7 can cause diarrhea, abdominal pain, and in some cases, intestinal bleeding and kidney failure.

The symptoms of *E. coli* O157:H7 illness generally occur within three to eight days after eating contaminated food. Most people recover in five to ten days.

Fewer than ten *E. coli* O157:H7 cells may be enough to cause foodborne illness in humans. A low infectious dose of two to 2,000 cells has been associated with outbreaks.

E. coli O157:H7 can survive in acidic environments that are lethal to other pathogens, for example fermented foods like sausage and apple cider.

Though potentially deadly to humans, *E. coli* O157:H7 is not pathogenic to cattle. A single cow, or cattle within the same herd, may harbor more than one strain of *E. coli* O157:H7. Some strains are thought to have greater acid tolerance than others.

The source of *E. coli* O157:H7 contamination on carcasses is likely due to fecal contamination during animal production and slaughter operations. Carcasses may become contaminated during hide removal or by cross-contamination with equipment and workers' hands.

Hazard Analysis and Critical Control Point (HACCP) systems in processing plants can reduce but cannot eliminate *E. coli* O157:H7 from foods unless a treatment, such as heat pasteurization or irradiation, is added that will kill the pathogen,.

Current research shows that competitive exclusion has the potential to eliminate *E. coli* O157:H7 from cattle before slaughtering. Competitive exclusion involves the use of non-pathogenic microorganisms to outgrow pathogens in the gastrointestinal tracts of animals.

Fresh manure used to fertilize garden fruits and vegetables may contaminate them with *E. coli* O157:H7. The largest reported *E. coli* O157:H7 outbreak, which caused thousands of illnesses, occurred in Japan in 1996. Radish sprouts were implicated as the source of infection.

If swallowed, fecally contaminated water in freshwater swimming areas may cause *E. coli* O157:H7 infection in both cattle and humans.

A large waterborne outbreak of *E. coli* O157:H7 occurred in Missouri in 1989–1990 when a public water supply became contaminated.

State Public Health Laboratory Report

Newborn Screening—Hypothyroidism, Phenylketonuria, Galactosemia and Hemoglobinopathies

James Baumgartner, B.S., M.B.A., Chief, Metabolic Disease Unit

	Nov 98	Dec 98	1998 Total
Specimens Tested	7,660	8,322	99,272
Initial (percent)	78.6%	80.9%	77,987
Repeat (percent)	21.4%	19.1%	21,287
Specimens: Unsatisfactory	98	117	1,219
HT Borderline	929	1,145	9,664
HT Presumptive Positive	15	8	185
PKU Borderline	0	1	5
PKU Presumptive Positive	0	2	10
GAL Borderline	16	24	90
GAL Presumptive Positive	5	4	27
FAS (Sickle cell trait)	83	105	960
FAC (Hb C trait)	15	22	264
FAE (Hb E trait)	2	4	23
FAX (Hb variant)	9	7	136
FS (Sickle cell disease)	1	4	33
FSC (Sickle C disease)	0	0	15
FC (Hb C disease)	0	3	6

HT = Hypothyroidism, PKU = Phenylketonuria, GAL = Galactosemia, Hb = Hemoglobin, YTD = Year to Date

1998 Index for *Missouri Epidemiologist*

KEY

J/F98 = January/February 1998
M/A98 = March/April 1998
M/J98 = May/June 1998
J/A98 = July/August 1998
S/O98 = September/October 1998
N/D98 = November/December 1998

Tips for Preventing Heat-Related Illness

People suffer heat-related illness when the body's temperature control system is overloaded. The body normally cools itself by sweating, but under some conditions, sweating just isn't enough.

Warning signs of heat exhaustion include: heavy sweating, paleness, muscle cramps, tiredness, weakness, dizziness, headache, nausea or vomiting, and or fainting. The skin may be cool and moist. The pulse rate will be fast and weak and breathing will be fast and shallow.

Seek medical attention immediately if symptoms are severe, or if the victim has heart problems or high blood pressure. Otherwise, help the victim to cool off, and seek medical attention if symptoms worsen or last longer than one hour. If heat exhaustion is untreated, it may progress to heat stroke.

The American Medical Association recognizes two forms of heat stroke. Classic heat stroke occurs without exertion, generally among people at risk—the elderly, infants and persons with chronic illness. Exertional heat stroke usually occurs in young, otherwise healthy adults who are engaging in rigorous exercise in the absence of heat acclimatization (e.g., athletes, construction workers and soldiers).

The best defense against heat-related illness is prevention. Staying cool and making simple changes in your fluid intake, activities, and clothing during hot weather can help you to remain safe and healthy.

Prevention Tips:

- ✔ Increase your fluid intake—regardless of your activity level. Don't wait until you feel thirsty to drink fluids. Ensure infants and children drink adequate amounts of liquids.

- ✔ Limit exercise in a hot environment, and drink 2–4 glasses of fruit juice or a sports beverage each hour.

- ✔ Avoid drinks containing caffeine, alcohol, or large amounts of sugar because they will actually cause you to lose more fluid. Also, avoid very cold beverages because they can cause stomach cramps.

- ✔ Stay indoors and in an air-conditioned environment. If air conditioning is not available, consider a visit to a shopping mall, public library, movie theater, supermarket or other air-conditioned location for a few hours.

- ✔ Contact your local public health agency to see if there are any heat-relief shelters in your area.

- ✔ Ask your doctor whether medications you take affect your body's response to the heat.
- ✔ Electric fans may be useful to increase comfort and to draw cool air into your home at night, but do not rely on a fan as your primary cooling device during a heat wave. When the temperature is in the upper 90s or higher, a fan will not prevent heat-related illness. A cool shower or bath is a more effective way to cool off.
- ✔ If you must be out in the heat, try to plan your activities so that you are outdoors either before noon or in the evening.
- ✔ While outdoors, rest frequently in a shady area so that your body's thermostat has a chance to recover.
- ✔ Wear lightweight, light-colored, loose-fitting clothing. When outdoors, a wide-brimmed hat will provide shade and keep the head cool. Infants and young children should also be dressed in cool, loose clothing and their heads and faces shaded from the sun with hats or an umbrella.
- ✔ NEVER leave anyone in a closed, parked vehicle.
- ✔ Wear sunscreen to protect skin from the sun's harmful rays. Sunburn affects your body's ability to cool itself and causes a loss of body fluids.
- ✔ If unaccustomed to working or exercising in a hot environment, start slowly, pick up the pace gradually and limit your exercise or work time.
- ✔ When working in the heat, monitor the condition of your co-workers and have someone do the same for you. If you are 65 years of age or older, have a friend or relative call to check on you twice a day when hot weather health advisories have been issued.
- ✔ Check regularly on those at greatest risk of heat-related illness:
  - infants and children up to 4 years of age
  - people 65 years of age or older
  - people who are overweight
  - people who overexert during work or exercise
  - people who are ill or on certain medications

Be aware that any sudden change in temperature, such as an early summer heat wave, will be stressful on your body. You will have a greater tolerance for the heat if you limit your physical activity until you become accustomed to the heat. If traveling to a hotter climate, allow several days to become acclimated before attempting any vigorous exercise, and work up to it gradually.

Further information on prevention of heat-related illness can be obtained through the Department of Health Home Page at **http://www.health.state.mo.us/ColdAndHeat/CAndH.html** or by calling the Office of Epidemiology at (573) 751-6128.

Heat Surveillance Summary - 1998

Diane C. Rackers
Office of Epidemiology

Summer 1998 was hot in Missouri as it was across the nation. The life-threatening heat wave that traveled through many states across the nation prompted the Centers for Disease Control and Prevention to issue a media advisory containing tips for managing heat on July 22, 1998. The Department of Health issued one statewide Hot Weather Health Advisory and one statewide Hot Weather Health Warning in 1998. See the sidebar on page 22 for the criteria used when issuing a Hot Weather Health Advisory or Warning.

The statewide Hot Weather Health Advisory was issued on June 25, 1998 when heat indexes reached 106º in St. Louis, Kansas City and Cape Girardeau, 104º in Columbia and 102º in Springfield. The peak of high heat indexes from June 23 through June 29 accounted for 35 percent (163) of the heat-related illnesses reported in 1998. No heat-related deaths occurred during this time period. However, four heat-related deaths occurred in the St. Louis metropolitan area between June 30 and July 2. See Figure 1.

The statewide Hot Weather Health Warning was issued on July 20, 1998 after heat indexes reached 112º in St. Louis, 110º in Kansas City, 108º in Cape Girardeau, 106º in Columbia and 101º in Springfield on July 19. The peak of high heat indexes from July 18 through July 22 accounted for 30 percent (142) of the heat-related illnesses reported in 1998. Four heat-related deaths occurred during this time period. See Figure 1.

In 1997, one statewide Hot Weather Health Advisory was issued on July 25. A peak of high heat indexes from July 12 through July 28 accounted for 76% (176) of the 232 heat-related illnesses reported in 1997.

(continued on page 22)

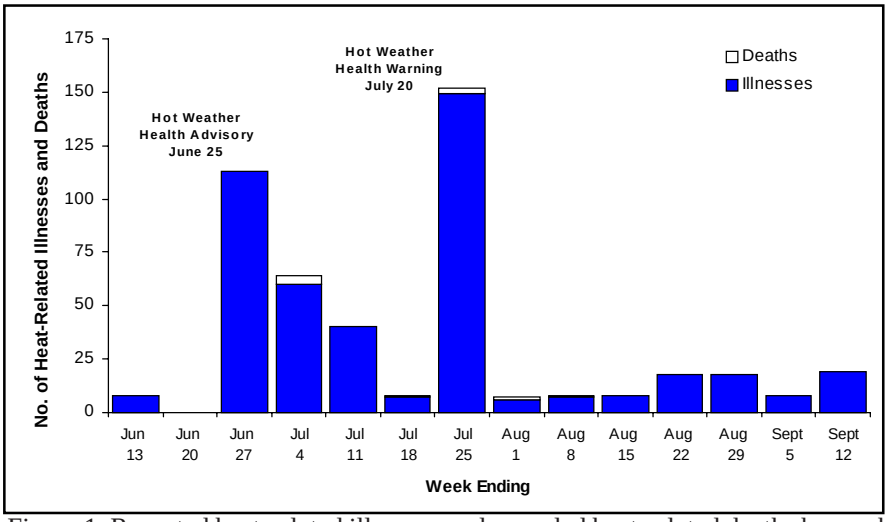


Figure 1. Reported heat-related illnesses and recorded heat-related deaths by week of occurrence, Missouri, Summer 1998.

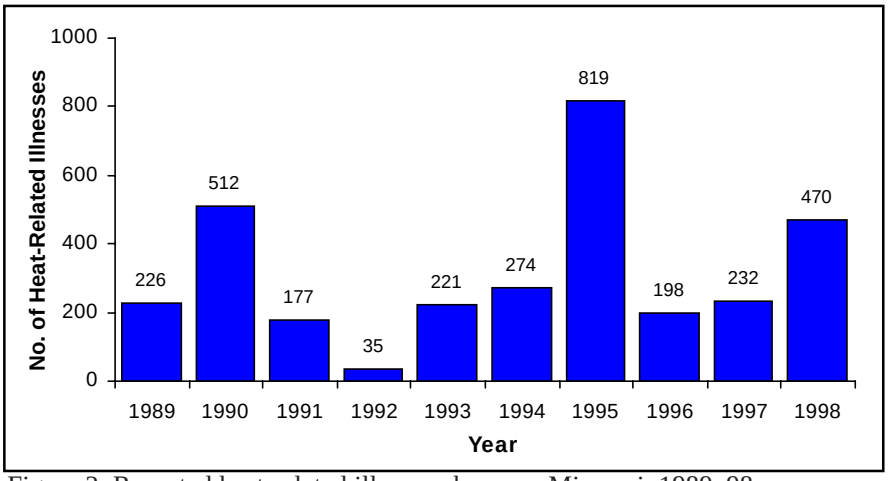


Figure 2. Reported heat-related illnesses by year, Missouri, 1989–98.

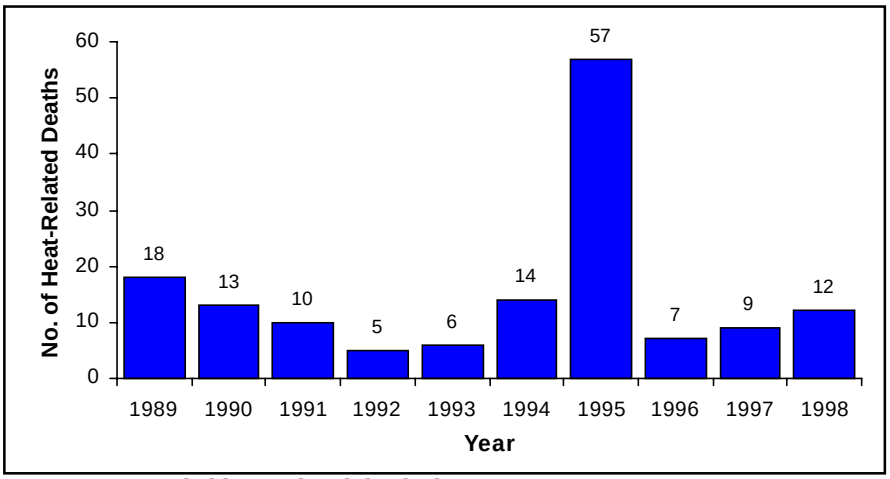


Figure 3. Recorded heat-related deaths by year, Missouri, 1989–98.

(continued from page 21)
In 1998, 470 heat-related illnesses were reported. This is twice the number of heat-related illnesses reported in 1996 or 1997, but still much lower than the 819 heat-related illnesses reported in 1995. See Figure 2.

In 1998, 12 heat-related deaths were recorded. This is three more deaths than recorded in 1997, but considerably lower than the 57 heat-related deaths recorded in 1995. See Figure 3. Considering the high number of heat-related illnesses reported in 1998, one would expect to have seen more heat-related deaths. This lower number of deaths may reflect the effectiveness of public health efforts to educate the public to recognize heat-related illness and seek medical treatment promptly.

Eight (67%) of the heat-related deaths in Missouri in 1998 were in individuals aged 60 or older. The elderly and chronically ill are more vulnerable to heat because they may perspire less and are more likely to have health problems requiring medications that impair the body's natural defenses to adjust to heat.

In 1998, one death in Missouri was a 4-year-old girl who disappeared from a Bible school/day care center. The child was later discovered locked in a car where she may have been for as long as six hours. Infants and children up to 4 years of age are sensitive to the effects of high temperatures and rely on others to regulate their environment and provide adequate liquids. Infants and children should never be left unattended in a parked car or other hot environment.

Department of Health
Stages of Hot Weather Health Advisories

A statewide **Hot Weather Health Advisory** will be issued when heat indexes of 105° in a large proportion of the state are first reached (or predicted). The Department of Health will inform the public about the risks of heat-related illness and urge concern for those at high risk. Monitoring of temperatures and heat indexes will be intensified. An **Advisory** will not be canceled.

A statewide **Hot Weather Health Warning** will be issued when:

1. Heat indexes, measured at peak afternoon temperatures, have remained at 105° or more for two days in a large proportion of the state **and**
2. When weather predictions are for continued high-stress conditions for at least 48 hours in a large proportion of the state.

During a **Warning**, the Department of Health will encourage local health departments to assure that cooling shelters are available and also encourage other community agencies to provide relief from the heat stress. A **Warning** will be downgraded or canceled when heat indexes in a large proportion of the state fall below 105° for 48 hours and the forecast is for 48–72 hours of continued relief from heat stress.

The Department of Health will recommend to the Governor that a statewide **Hot Weather Health Emergency** be declared when:

1. Extensive areas of the state are experiencing high and sustained levels of heat stress (determined when the heat index reaches 105° for three days); **and**
2. Surveillance data demonstrate increased levels of heat-related illness and death statewide; **and**
3. The National Weather Service predicts that hot and humid conditions are likely to continue for several days in a large proportion of the state.

An **Emergency** will be canceled when the heat indexes in a large proportion of the state fall below 105° for 48 hours and the National Weather Service predictions indicate a low probability for the return of severe conditions for the following 48 to 72 hours.

The St. Louis metropolitan area accounted for a large proportion of the heat-related illnesses and deaths in 1998; 291 (62%) of the heat-related illnesses and five (42%) of the heat-related deaths. Although the number of heat-related illnesses reported from St. Louis in 1998 was more than twice the number reported in 1997, the number of heat-related deaths increased by only one. We attribute this to the diligent efforts of St. Louis Operation Weather Survival. This coordinated effort between public health agencies, voluntary organizations, the media and others has been very effective in reducing excess mortality due to stressful weather conditions in the St. Louis area. In 1998, St. Louis Operation Weather Survival issued three Hot Weather Health Advisories and two Hot Weather Health Warnings.

Recognizing the importance of preventing heat-related illnesses, the American Medical Association adopted the following policies[1] at their 1997 annual meeting:

- Physicians should identify patients at risk for extreme heat-related illness such as the elderly, children, individuals with physical or mental disabilities, alcoholics, the chronically ill, and the socially isolated.

Patients, family members, friends, and caretakers should be counseled about prevention strategies to avoid such illness. Physicians should provide patients at risk with information about cooling centers and encourage their use during heat emergencies.

- The American Medical Association encourages patients at risk for heat-related illness to consider wearing appropriate medical identification.
- The American Medical Association supports efforts to develop and disseminate educational materials on the prevention and treatment of heat-related illnesses and encourages state, county and speciality medical societies to work with public and mental health agencies and others in developing and implementing community emergency plans for prevention of heat-related morbidity and mortality.

The Department of Health supports these policies of the American Medical Association. We have printed tips for preventing heat-related illness on pages 19–20 of this issue. We would encourage you to duplicate this information and use it to educate your patients about heat-related illness.

Prompt notification of heat-related illnesses and deaths is essential for an effective heat surveillance system. If you are aware of heat-related illnesses or deaths, please report them promptly to your local health department.

Further information on prevention of heat-related illness and past surveillance data for Missouri can be obtained through the Department of Health Home Page at **http://www.health.state.mo.us/ColdAndHeat/CAndH.html** or by calling the Office of Epidemiology at (573) 751-6128.

REFERENCE:

1. Blum LN, Bresolin LB, Williams MA. From the AMA Council on Scientific Affairs. Heat-Related Illness During Extreme Weather Emergencies. JAMA 1998;279(19):1514.

LATE BREAKERS

☞ **Change in Recommendation for Meningococcal Vaccine for Travelers**—The Centers for Disease Control and Prevention (CDC) no longer recommends meningococcal vaccine for travelers to Saudi Arabia, Nepal, India, Mongolia, Kenya, Burundi and Tanzania. The change in this recommendation was prompted by the lack of evidence of ongoing epidemics of invasive meningococcal disease in these countries. This announcement supersedes the most recent edition of the CDC publication "Health Information for International Travel" which recommends meningococcal vaccine for travelers to these countries. Persons who are going to Saudi Arabia should be cautioned that Saudi officials may require persons who are making religious pilgrimages or seeking employment in their country to produce a current certificate of vaccination against meningococcal disease even though it is no longer recommended by CDC. If you have questions, please contact the Section of Vaccine-Preventable and Tuberculosis Disease Elimination at (800) 699-2313.

☞ **Rotavirus Vaccine**—The Advisory Committee on Immunization Practices released its recommendations for the use of rotavirus vaccine in March 1999. Rotavirus affects virtually all children during the first five years of life, and rotavirus infection is the most common cause of severe gastroenteritis in the United States and worldwide. The Food and Drug Administration approved oral, live rotavirus vaccine on August 31, 1998, for use among infants. The full recommendations are on the Internet at **http://www.cdc.gov/epo.mmwr/preview/mmwrhtml/00056669.htm**. If you have questions, please contact the Section of Vaccine-Preventable and Tuberculosis Disease Elimination at (800) 699-2313.

☞ The Missouri Information for Community Assessment (MICA) health data system won first prize in the Partnership Technology Games held at the Prevention 99 Conference in Washington, D.C., March 18–21, 1999. MICA allows users to generate tables and maps by specific condition, year of occurrence, age, race, sex, county and zip code. Presently data is available for the following conditions: births, deaths, emergency visits, hospital discharges, inpatient procedures, injuries, and motor vehicle crash and outcome. Through MICA information on obtaining lists, labels, diskettes or tapes for various health professions can be accessed along with counts and costs for obtaining the information in various formats. MICA is available through the Department of Health Home Page at **http://www.health.state.mo.us/MICA/nojava.html**. Access to additional data sets is being planned.

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The Managing Editor is H. Denny Donnell, Jr, MD, MPH, State Epidemiologist. Production Manager is Diane C. Rackers. Questions or comments should be directed to (573) 751-6128 or toll free (800) 392-0272.

Alternate forms of this publication for persons with disabilities may be obtained by contacting the Missouri Department of Health, Office of Epidemiology, P.O. Box 570, Jefferson City, MO 65102-0570, Ph: (573) 751-6128. TDD users can access the preceding phone number by calling (800) 735-2966.

Upcoming Conference

THE ESSENTIALS OF INFECTION CONTROL
9TH ANNUAL CONFERENCE

September 15–17, 1999
Capitol Plaza Hotel, Jefferson City, MO

Purpose:
This conference is a **STARTING POINT** to prepare healthcare professionals as facilitators and resource persons in the prevention and control of common nosocomial infections. It will aid the professional **new to the responsibilities of infection control** to manage the everyday responsibilities of infection surveillance, analysis of disease data, and problem identification and resolution. Important resources for assistance will also be shared.

Sponsors:
Missouri Department of Health, Missouri Hospital Association, Missouri APIC Chapters and other organizations.

Registration:
For a complete conference brochure and registration form, call (573) 751-6113.

You Should Attend If You Are A:
Healthcare professional **new** to the field or to the tasks of an infection control professional, or who assists with:

- the infection control program in any healthcare setting (acute care, ambulatory care, home health, long-term care, mental health, public health, rehabilitation, other)
- consultation on infectious disease prevention and control
- outbreak investigation and follow-up
- surveys, investigations or licensing activities relevant to infection control practices.

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Section for Environmental Public Health 1998 Annual Report

Brian M. Quinn
Section for Environmental Public Health

The Section for Environmental Public Health (SEPH) is a new name for a group of highly diverse programs singly dedicated to protecting the health and well-being of people in Missouri from hazardous environmental contaminants and conditions. SEPH was created from the blending and strengthening of two related bureaus—Environmental Epidemiology and Community Environmental Health—into one comprehensive environmental public health unit. From food safety to childhood lead poisoning prevention, from risk and health assessment to special public health studies, SEPH's diversity is its strength and service is its mission.

The following report reflects activities and accomplishments from SEPH's first full year of service under the new organization. It should be noted, however, that this annual report does not pull from all of SEPH's various programs. There are some programs that, though they provide crucial, health protective services across the state, they would not be considered epidemiologically based under the strict definition of the term.

SEPH Risk Assessment Programs

SEPH's two risk assessment programs are heavily involved in assessing the risks that hazardous substances in the environment pose to human health. These programs work closely with other state and federal environmental and health agencies, including the U.S. Environmental Protection Agency (EPA), the Missouri Department of Natural Resources (DNR), the federal Agency for Toxic Substances and Disease Registry (ATSDR), the Department of Defense (DOD) and the Department of Energy (DOE). These programs assess human risk through several different kinds of documents that discuss exposure levels, safe clean-up levels and various aspects related to exposure to substances found at hazardous waste sites statewide. An EPA-funded risk assessment involves a quantitative analysis or review of information about a hazardous waste site. This kind of assessment provides a mathematical "best guess" of what will happen if the site is not cleaned up or if the site is only cleaned up to a specific level of contamination, rather than a safe (walk away) level. A state-funded risk assessment provides more generic clean-up guidelines for sites, based on similar but not identical assumptions/formulae to EPA numbers. The information given in the following two subsections reflects extensive research, cooperation, coordination, document review and interagency communication by SEPH staff. The average risk assessment may take as long as two months to complete and submit to EPA.

Risk Assessment Program (EPA)

The following activities were completed during 1998:

- Completed three site-specific human health risk assessments.
- Reviewed two site-specific ecological risk assessments.
- Developed safe residual soil levels/remediation goals for four sites.
- Reviewed one risk assessment (from another agency).
- Reviewed 25 site documents for health-related issues.
- Attended four training courses/conferences.
- Attended and/or gave presentations at six public meetings.
- Attended 19 technical site meetings.

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- Conducted seven site visits/investigations.
- Participated on the Governor's Interagency Task Force on Methamphetamines
- Worked on two projects with assessors from other agencies and/or responsible parties.
- Maintained effective communication and working relationships with numerous local, state and federal agencies and organizations.

For more information, contact the program at (800) 392-7245.

Risk Assessment Program (State)

The following activities were completed during 1998:

- Reassessed 53 abandoned or uncontrolled hazardous waste sites for their risk to public health.
- Assessed three new abandoned or uncontrolled hazardous waste sites for their risk to public health.
- Analyzed 22 sites to determine if private drinking water wells were impacted by nearby contamination.
- Continued assisting DNR by reassessing the health risks at five DOD sites. One is an active Air Force base; the other sites are inactive, but are being cleaned up for future use.
- Provided health information to DNR to assist with its Voluntary Cleanup Program. Sixty of these sites are already cleaned up, while 120 more properties are in the process of cleanup.
- Completed six clean-up assessments on sites other than abandoned or uncontrolled hazardous waste sites.
- Assisted DNR in developing a guidance document for their Brownfield Redevelopment Program.
- Provided consultative services to DNR's Air Pollution Control Program regarding acceptable ambient air levels at 25 sites.

For more information, contact the program at (800) 392-7245.

Public Health Assessment Program (ATSDR)

The Public Health Assessment Program is part of a state cooperative agreement with ATSDR to conduct health assessments in Missouri communities near hazardous waste sites. In contrast to EPA and state risk assessments, public health assessments provide a qualitative evaluation of exposures to contaminants at a site and related adverse health effects that could have occurred in the past, are presently occurring, or could occur in the future. These health effects are evaluated by estimating exposures based on interviews with citizens, community and elected leaders, etc., or based on review of documents such as site investigations, risk assessments, site histories and any other available information about a site. Findings from these assessments are reported through public health assessments and health consultations. These documents are designed to address community concerns, as well as to inform and educate the communities about sites, and help them make decisions about how to protect themselves from exposure to site-related contaminants and resulting adverse health effects. These documents also are used by environmental agencies with regulatory power (e.g., EPA) to help make the most health protective decisions when planning clean-up or remediation actions at a site.

All of these program activities represent a tremendous amount of communication, coordination and cooperation with numerous local, state and federal departments and agencies required to complete the work summarized in this report. SEPH has also been heavily involved in numerous other sites and issues which are currently in the early stages of community and governmental activity and development**.** In 1998, the Public Health Assessment Program:

- Completed two pubic health assessments.
- Completed 20 health consultations.
- Hosted or attended 11 public availability sessions.
- Visited 13 hazardous waste sites statewide.
- Coordinated one community survey.
- Participated in five Community Assistance Group meetings.
- Participated in numerous health education group meetings.
- Provided technical assistance to other agencies.

For more information, contact the program at (800) 392-7245.

Childhood Lead Poisoning Prevention Program

Childhood lead poisoning is one of the most common preventable environmental health problems in the world today. When lead is introduced into the body through ingestion or inhalation, its adverse toxic health effects on young children's developing nervous, hematopoietic and renal systems can range from acute (coma and seizures) to subtle (learning and behavioral problems or anemia). Young children (age 0–72 months) are at greatest risk due to their hand-to-mouth behaviors. Testing, treatment and prevention of access to lead hazards are key elements to finding and, ultimately, eliminating childhood lead poisoning.

Dust and debris from deteriorating lead-based paint in older housing is considered to be the primary contributor to childhood lead poisoning in the United States today. Paint with the highest lead content was used extensively before 1950. In Missouri, pre-1950 housing comprises nearly 29 percent of all housing stock. In contrast, only 27 percent of the nation's housing stock was built before 1950. Compared to other states, Missouri has the 24th highest percentage of pre-1950 housing.

Table 1. Percentage of Children Aged 1–5 With Blood Lead Levels ≥10 µg/dl by Income Level, United States, 1991–1994

Income Level	Percent of Children Aged 1–5 With Blood Lead Levels ≥10 µg/dl
Low	8.0%
Middle	1.9%
High	1.0%
All children	4.4%

Source: Centers for Disease Control and Prevention. Screening Young Children for Lead Poisoning: Guidance for State and Local Public Health Officials. November 1998.

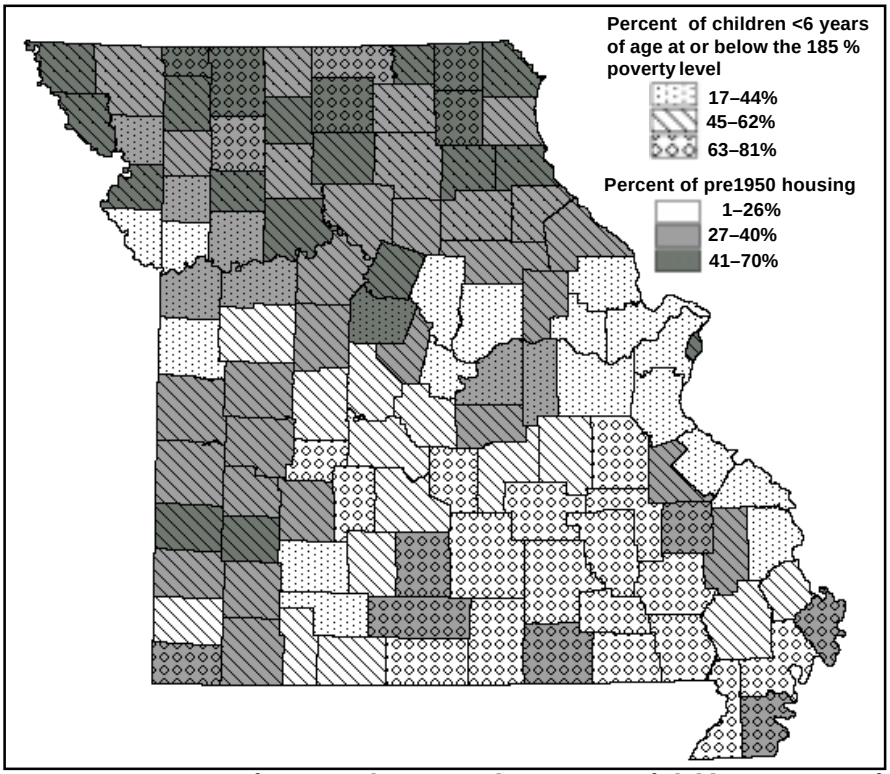

Figure 1. Percentage of pre-1950 housing and percentage of children <6 years of age at or below the 185 percent poverty level by county, Missouri, 1990.

Studies also show a strong relationship between elevated blood lead levels and income. Logically, the increased likelihood for poorer children to inhabit older, deteriorating housing would be a reasonable conjecture. The Centers for Disease Control and Prevention (CDC) data substantiate that children in lower income levels are nearly twice as likely to have elevated blood lead levels when compared to all children tested. See Table 1.

However, any remodeling activities that have the potential to disturb lead-based paint and/or its dust, regardless of a family's income, can produce lead hazards and create the potential for lead poisoning. Consequently, caregivers should be aware of these and other factors, and should assess the potential risk for lead poisoning on a case-by-case basis.

Figure 1 shows the percentage of pre-1950 housing by county in Missouri with an overlay of the percentage of children less than 6 years of age who are at or below 185 percent of the poverty level. These indicators identify many counties in Missouri that show a high potential risk for childhood lead poisoning. Analyzing smaller geographic boundaries (such as zip codes, census tracts, etc.) can also identify areas with a high potential risk for lead poisoning that the map in Figure 1 may not depict.

While Missouri has its share of older homes containing lead-based paint and poverty, the state also features areas of contaminated soil in vicinities near lead mines and smelters due to its unique role as the largest producer of lead and lead products in the United States. Other related risk factors include parents employed at lead mines or smelters and/or other lead-related occupations and hobbies.

There are also other sources of lead hazards such as (the following list is not all-inclusive):

- Improperly glazed or fired pottery and ceramic-ware that when used for food or beverage vessels can leach lead into food
- Mini-blinds
- Lead crystal
- Stained-glass making, artist's paints, crayons (imported), inorganic pigments
- Lead solder (used for welding e.g., electronics, imported food cans/containers, etc.)
- Lead-cast figurines or jewelry
- Imported candy (wrappers)
- Ammunition, batteries, fishing sinkers
- Traditional Medicines and Cosmetics including:
  - ASIAN—Chuifon tokuwan, payloo-ah, ghasard, bali goli, kandu
  - MEXICAN—azarcon and greta (also known as liga, Maria Louisa, alarcon, coral, and rueda)
  - MIDDLE EASTERN—alkohl, kohl, surma, saoot, cebagin

Reported testing in Missouri during 1998 resulted in 43,591 Missouri children less than 6 years of age screened

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for lead poisoning. This figure represents ten percent of the estimated population of children in this age group. 1998 is the second highest year of lead testing activity since the Missouri Department of Health began lead surveillance in 1995. Screening during 1998 increased by 11 percent compared to 1997 (39,402). Figure 2 on page 4 shows the ranges of lead screening activity in 1998 by county.

Of the children tested for lead poisoning during 1998, 5,342 (12.3%) were identified with blood lead elevations ≥10 µg/dl (CDC's level of concern). In comparison to 1997 figures (5,382 elevated/39,402 screened = 13.7%), this represents a 1.4 percent decline in the proportion of children testing at or above the level of concern for lead poisoning. The number of children tested and the number with elevated blood lead levels by county are available upon request from the Missouri Department of Health Childhood Lead Poisoning Prevention Program at (800) 575-9267.

A major function of the Missouri Childhood Lead Poisoning Prevention Program is to increase the number of reported blood lead screenings in order to determine the extent of lead poisoning and its location. Efforts necessary to accomplish this include educating Medicaid Managed Care plans and physicians regarding required blood lead screening during 12- and 24-month well-child visits, encouraging private laboratories to report, and increasing general public awareness through various media sources. Future efforts will continue to be focused in areas identified to have the greatest potential risk to children based on housing, poverty, screening numbers and lead occupations.

Another primary role of the Missouri Childhood Lead Poisoning Prevention Program is to identify and prevent/eliminate access to environmental lead hazards for children with blood lead levels ≥20 µg/dl. Home environmental assessments are generally conducted by a public health nurse and sanitarian (trained in lead hazard assessment). They educate the family about specific personal hygiene, such as frequent and thorough handwashing by the child, washing toys, wet mopping to remove lead dust from floors and surfaces where small children play, and good nutrition through a diet high in iron and calcium to prevent bodily absorption of lead. During 1998, 1,654 environmental assessments to detect sources of lead hazards were conducted.

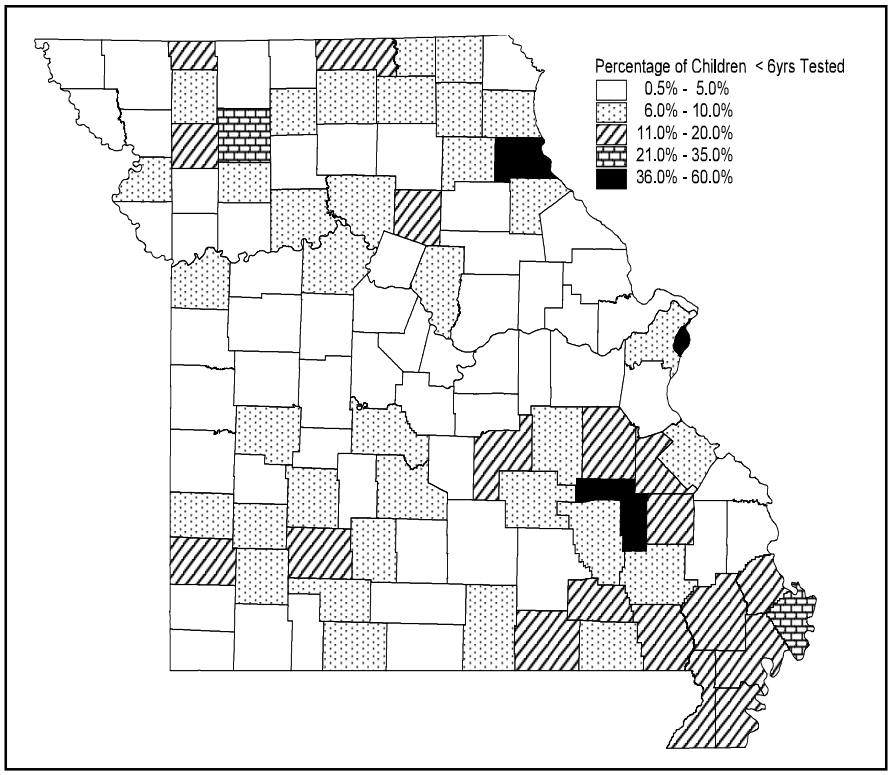

Figure 2. Ranges of childhood lead screening by county, Missouri, 1998.

Throughout the state, other lead program efforts include increasing community awareness and involvement in the efforts to eliminate and prevent childhood lead poisoning. Information concerning the level of risk for childhood lead poisoning for local needs assessments play an integral role in this process. For further information, please contact your local health department, or call the Childhood Lead Poisoning Prevention Program at at (800) 575-9267.

Environmental and Occupational Diseases and Conditions Passive Surveillance System

The section maintains this passive surveillance system to document occupational diseases and environmental health conditions which are required to be reported to the Department of Health by 19 CSR 20-20.020 and 19 CSR 20-20.080. Each year, the surveillance system receives reports on cases of environmental and occupational diseases and conditions that are entered into a database for evaluation and analysis. Cases of lead poisoning in children under 6 years of age are not included in the system because they are tracked by the state's Childhood Lead Poisoning Prevention Program described earlier in this report.

The majority of conditions reported within a given year typically are lead poisoning in adults and lead poisoning in 6 to 17-year-olds. However, final reports for lead poisoning in these two age groups were unavailable for this

annual report. Also reported to the surveillance system are acute chemical poisoning (10 cases in 1998) and carbon monoxide poisoning (31 cases in 1998).

For more information, contact the program at (800) 392-7245.

Radiological Health Program

SEPH's Radiological Health Program is responsible for overseeing and regulating sources of ionizing radiation in non-medical settings. These sources are used in many ways, for example in nuclear pharmacies and industrial radiography. The program is also involved in emergency response and environmental radiation activities. Program staff also gather sampling results from radon detectors distributed statewide through county and city health departments for testing in their areas, and provide radon information through seminars, displays and public awareness presentations. The Radon Hotline provides Missouri residents easy access to radon information. In 1998, the Radiological Health Program:

- Continued to register and reregister ionizing radiation sources used in non-medical settings:
  - 89 industrial radioactive material users
  - 118 x-ray users
- Performed periodic radiation safety surveys of industrial x-ray and radioactive material registrants.
- Participated in extensive training activities in preparation for emergency events at the Callaway and Cooper nuclear power plants. Training included drills, dress rehearsals and exercises. This year's Cooper exercise was federally evaluated and the section successfully demonstrated the capability to protect public health and safety in the event of a nuclear plant emergency event.
- Responded to four requests for assistance by scrap metal recyclers and landfill operators to locate and characterize radioactive sources.
- Continued to maintain and cultivate close working relationships with local, state and federal agencies and organizations including the Missouri Department of Natural Resources, Environmental Protection Agency, American Lung Association, Missouri Association of School Administrators and the Missouri Public Health Association. These relationships provided opportunities for information exchange, data gathering, coalition building, community outreach and funding.
- Presented 26 radon awareness programs at seminars, health fairs and other meetings.
- Provided radon detectors to county and city health departments for testing in their areas. These agencies distributed more than 1,500 detectors to the public.
- Received approximately 700 phone calls through the Radon Hotline.

For more information, contact the Radon Hotline at (800) 669-7236.

Special Studies

One of SEPH's most important functions is to coordinate and conduct special epidemiological studies that are designed to determine whether and to what extent Missourians are exposed to hazards in the environment. These studies require a tremendous amount of time, effort, coordination, planning, financial resources and personnel. A study can take up to two years or longer to complete from inception to the published final report. The following summarizes special study efforts in 1998:

Missouri Statewide Food Service Survey

The section conducted this survey during September, October and November 1998. Groundwork for the statewide survey was laid by a pilot survey conducted in January 1998 in the department's northeastern health district. The pilot, which included 100 randomly selected food service establishments, was designed to determine if the survey questionnaire and inspection protocol were viable, whether personnel conducting the survey needed additional training, whether the survey would generate useful baseline information, and to identify public health needs in Missouri's food service industry. The statewide survey involved 1,200 food service establishments across the state. Information was collected by questionnaire on the education and training of food service employees, needs for educational/training materials in languages other than English, hepatitis A vaccination levels for food service employees, length of time employed in food service, number of employees, number of meals/customers served, reasons for taking sick days, and the presence of policies and procedures. A regular inspection was conducted at the same time. Analysis of the information collected from this survey is currently being conducted. A report of survey results will be published later in 1999.

Lead Exposure Around Big River Mine Tailings Site

The section concluded this lead exposure study, funded by ATSDR, in children between the ages of 6 months and 6 years living in the area around the Big River Mine Tailings Site in St. Francois County. The study found that 17 percent of participants in the study area had elevated blood lead levels, compared to three percent in the control area. Analysis of environmental samples and questionnaire data was completed in 1996. The draft report was released to the public on May 27, 1998. The final report was released to the public in August 1998. If you have questions regarding this study or its availability, please call (800) 392-7245.

Dioxin Exposure at Times Beach

The section also continued this study to determine the exposure of area residents to emissions from the dioxin incinerator in Times Beach, Missouri. The first round of blood samples was collected in September 1995, before the incinerator began operation in March 1996. Blood samples were taken from 76

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Tuberculosis Annual Report for 1998

Jim Pruitt,
Holly Withrow
Section of Vaccine-Preventable and Tuberculosis Disease Elimination

The number of reported tuberculosis cases nationwide continued to decrease in 1998. According to the Centers for Disease Control and Prevention (CDC) 18,361 cases of tuberculosis were reported in 1998, representing a 7.5 percent decrease from the 19,851 cases reported in 1997. This is the first time since national tuberculosis reporting was initiated in 1953 that the United States has had less than 19,000 cases reported during a one-year period. This represents the sixth consecutive year that tuberculosis cases have decreased nationally.

The number of reported tuberculosis cases in Missouri decreased by 25.8 percent, from 248 cases in 1997 to 184 cases in 1998. The case rate decreased from 4.7 to 3.4 per 100,000 population. See Figure 1 for trends.

The major metropolitan areas accounted for 69 percent of reported cases in Missouri during 1998. This compares to 63 percent in 1997. Rural areas accounted for 30 percent of the cases in 1998 compared to 37 percent in 1997. Three of the four major metropolitan areas experienced decreases in the number of reported cases. St. Louis City decreased from 60 to 55 cases (-8.3%), and St. Louis County decreased from 47 to 21 cases (-55.3%). In Kansas City, the number of cases remained unchanged at 39 cases. In Springfield-Greene County, the number of cases decreased from 10 to 6 cases (-40.0%). The case rates for these areas in 1998 were 16.1 per 100,000 for St. Louis City, 2.1 for St. Louis County, 8.8 for Kansas City, and 2.7 for Springfield-Greene County. See Figure 2.

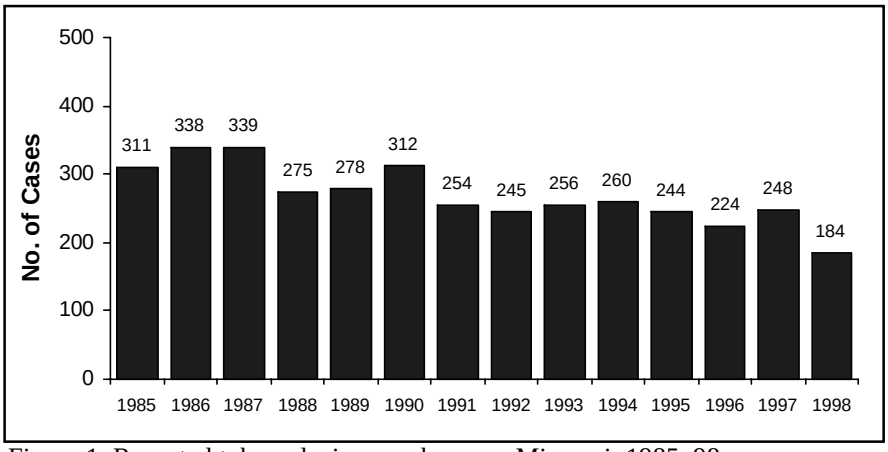

Figure 1. Reported tuberculosis cases by year, Missouri, 1985–98.

The number of reported cases in the rural areas showed a decrease of 9 percent, from 92 cases in 1997 to 56 cases in 1998. Decreases were noted in five of the six health districts. The Northwestern District decreased from 18 to 11 cases (-3.9%); the Southwestern District decreased from 15 to 14 cases (-6.7%); the Southeastern District decreased from 30 to 11 cases (-63.3%); the Central District decreased from 18 to 15 cases (-16.7%); and the Eastern

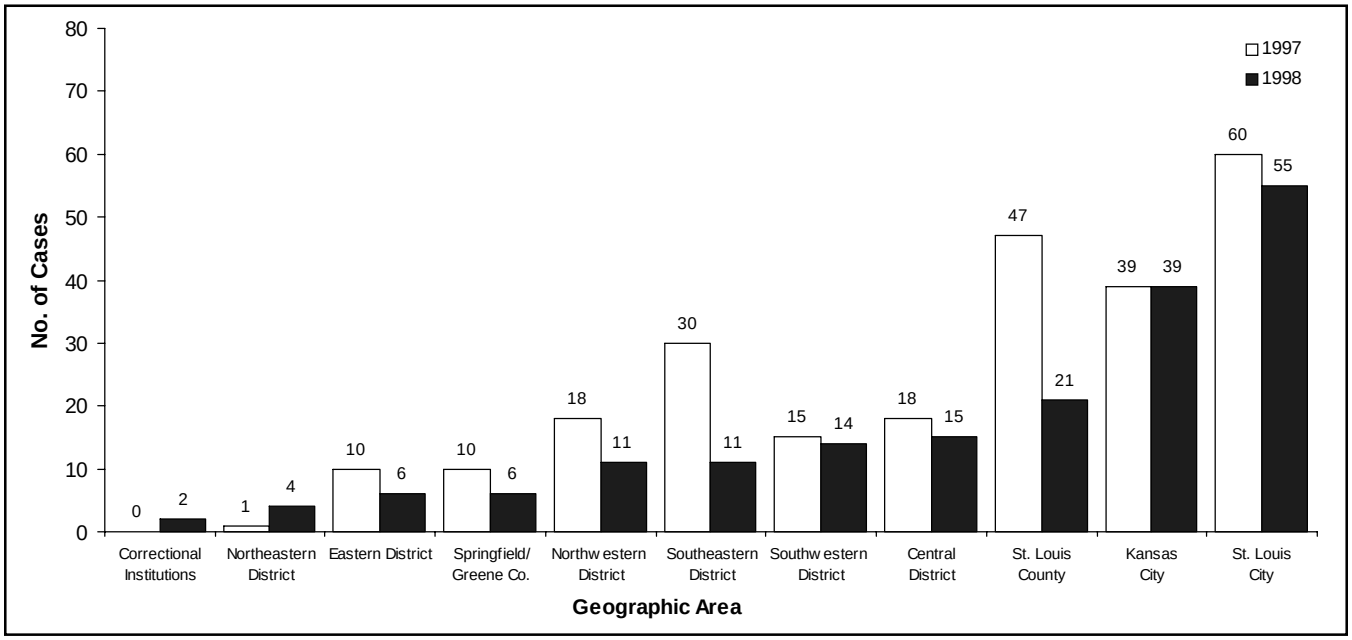

Figure 2. Reported tuberculosis cases by geographic area, Missouri, 1997 and 1998.

District decreased from ten to six cases (-40%). The Northeastern District increased from one case to four cases (300%). An increase from no cases to two cases was observed in the state and federal correctional institutions. See Figure 2.

Reported cases of tuberculosis among males continued to outnumber those in females. In 1998, 123 (67.0%) of the cases were male and 61 (33.0%) were female. In 1997, 152 (61.3%) of the cases were male and 96 (38.0%) were female.

In 1998, individuals with active tuberculosis disease ranged in age from 1 to 99. Decreases in reported cases were observed in all but the 0–4 age group. As in prior years, the largest number of cases occurred in persons age 65 and older. See Figure 3.

Tuberculosis case rates vary significantly among racial and ethnic groups. From 1997 to 1998, case rates per 100,000 population decreased among whites (from 2.6 to 1.9); blacks (from 16.8 to 12.8); Hispanics (from 23.1 to 20.2); and Asians (from 50.7 to 34.0). While these decreases are welcome, the case rate among blacks, Hispanics, and Asians is still noticeably high. See Figure 4.

The largest proportion of active disease cases, 147 cases (80%), were pulmonary compared to 37 cases (20%) which were extrapulmonary. Of the 37 extrapulmonary cases, 11 were dual disease sites. The sites of extrapulmonary disease were lymphatic (14), pleural (10), bone (4), miliary (3), genitourinary (2), peritoneal (2) and other (1). See Figure 5 on page 8.

In 1998, drug susceptibility studies were performed on 131 (71%) of the 184 tuberculosis cases reported. Two (1%) of these 184 cases were found to have multiple-drug resistant organisms. In addition, the isoniazid resistance rate remained high at 5.4 percent. When the isoniazid rate exceeds four percent, initial use of four tuberculosis drugs is recommended for all active disease patients and suspects.

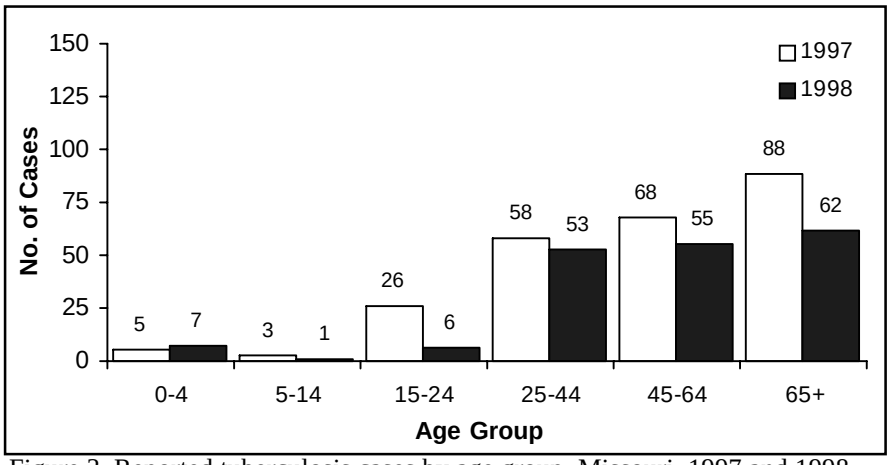

Figure 3. Reported tuberculosis cases by age group, Missouri, 1997 and 1998.

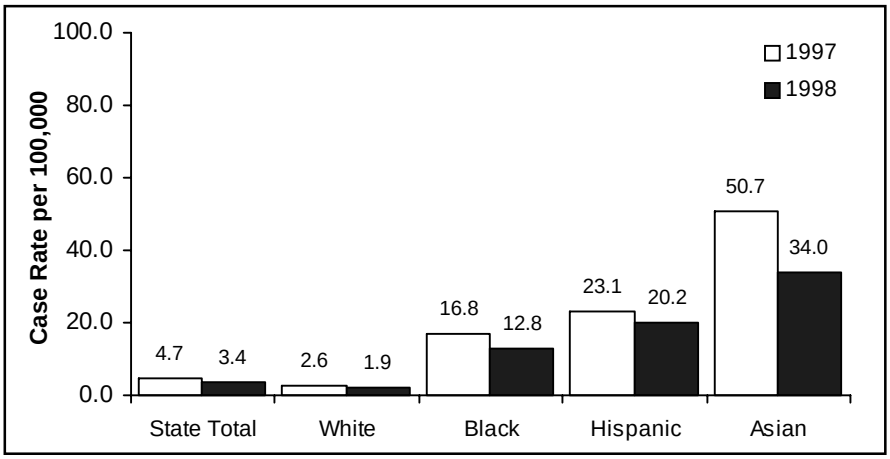

Figure 4. Tuberculosis case rates per 100,000 population by race/ethnicity, Missouri, 1997 and 1998.

A comparison of the tuberculosis case register and the HIV/AIDS case register is done on a quarterly basis to find cases with both conditions. This matching process was done manually from lists of reported cases. As of March 1999, this manual process has been replaced by a computerized data matching system. The computerized matching process is being done quarterly. For the period of January through December 1998, there were a total of eight tuberculosis/AIDS cases. Of the eight cases of tuberculosis/AIDS, four were reported from St. Louis City, three from St. Louis County and one from Kansas City. Six of the eight cases were between the ages of 20 and 39 and two were between 40 and 45. Seven of the eight cases were male and one was female.

In 1998, two active tuberculosis disease cases were reported in the state correctional system as compared to no cases in 1997 and one case in 1996. During 1998, a total of 46,833 inmates were skin tested. Of those, 600 (1.3%) were identified as new positives and 4,531 (9.7%) had a history of previously positive skin tests. During 1998, a total of 390 inmates completed treatment for tuberculosis infection and 178 were released while still receiving tuberculosis infection medication. In 1998, a total of 8,427 state correctional system employees were tested. Of those tested, 81 (1.0%) were identified as new positives and 795 (9.4%) had a history of previously positive skin tests.

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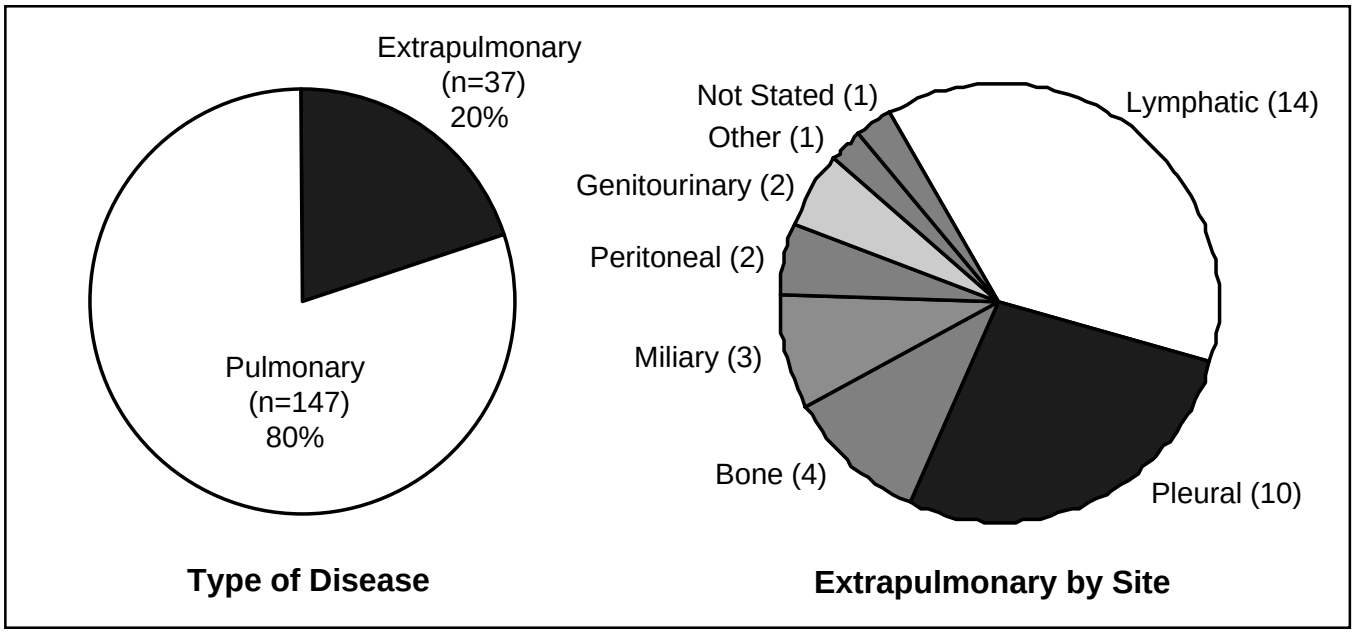

Figure 5. Reported tuberculosis cases by type of disease and site, Missouri, 1998.

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The number of tuberculosis cases reported in nursing homes is of concern to the Section of Vaccine-Preventable and Tuberculosis Disease Elimination. These facilities accounted for 11 (6.0%) of the reported cases in 1998. The section continues to address this issue by working closely with nursing home associations, residential care associations and the Division of Aging to provide facilities with the recommendations for tuberculin skin testing and follow-up of residents and employees.

The number of tuberculosis cases occurring among foreign-born persons decreased from 52 (21%) of reported cases in 1997 to 38 (21%) of reported cases in 1998. Case rates among Asians, who are mostly foreign-born, are disproportionately higher than for other racial and ethnic groups.

The initial use of four tuberculosis medications is another priority for the section in order to lower the drug resistance rate. All active disease patients, and all suspects, should be started on four medications from the beginning of treatment until drug susceptibility is determined. Those medications include isoniazid, rifampin, pyrazinamide and ethambutol or streptomycin. In 1996, only 67.9 percent of active disease patients were placed on the four-drug regimen. This improved to 75.0 percent in 1997 and to 79.0 percent in 1998. However, much work remains in order to reach 100 percent compliance.

Directly observed therapy (DOT) has been adopted as the standard of care in Missouri. Our emphasis is on placing all active disease patients on DOT to ensure that treatment is completed. In areas where there are few active disease cases, steps should be taken to put patients with tuberculosis infection on directly observed preventive therapy (DOPT). These strategies include watching people swallow their pills. Our first priority is to motivate people to come to the local health department for DOT/DOPT. However, if this is not possible, we must go to the patient. Community volunteers can be recruited to assist the local health department in conducting DOPT. Volunteers may include family, friends, neighbors, local ministers, retired persons, pharmacists, school nurses, staff in physician offices and other individuals. In 1996, 74.1 percent of active disease patients were placed on DOT. This improved to 75.0 percent in 1997 and to 84.0 percent in 1998. However, additional efforts must be undertaken in order to reach our goal of 100 percent. This will require the commitment and creativity of all those involved.

Missouri's goal is to have no more than 175 new tuberculosis cases annually by the year 2000, and to then eliminate tuberculosis in the state by the year 2010.

Tuberculosis infection means that the person has bacteria that cause tuberculosis in their body. They are not sick because the bacteria are inactive. They cannot spread the bacteria to others. A person with tuberculosis infection usually has a positive skin test, a normal chest x-ray and does not feel sick.

Tuberculosis disease means that the person is sick from bacteria that are actively reproducing in their body. Persons with pulmonary tuberculosis usually have a positive skin test, an abnormal chest x-ray and one or more of the symptoms of tuberculosis such as persistent cough, chest pain, feeling weak, weight loss, fever and/or night sweats. These people are often capable of giving the infection to others.

Occupational Fatality Surveillance Systems and Field Investigations

Thomas Ray
MO FACE Program

Lives cut short by workplace accidents are not uncommon in Missouri. For years the Department of Health has maintained statistics on these types of deaths. These statistics came from death certificates where the "injury at work" category was marked "Yes." In Missouri, a certified physician, coroner or medical examiner must complete the death certificate. Many times the information to establish work-relatedness of the death was vague or not available. So, generally, work-related deaths were under-reported.

In 1991, two programs were initiated to identify work-related fatalities in Missouri. These are the Missouri Occupational Fatality Assessment and Control Evaluation (MO FACE) program and the Census of Fatal Occupational Injuries (CFOI) program. These programs, sponsored by the National Institute for Occupational Safety and Health (NIOSH) and the Department of Labor, Bureau of Labor Statistics, respectively, identify more than 140 worker fatalities each year in Missouri. As compared to occupational fatality data generated before these programs were in effect, this surveillance system increased occupational fatality reporting by 25 percent. This increase in the number of worker deaths is not due entirely to an increase in the worker fatality rate, but rather to a more effective occupational fatality surveillance system created by these programs.

Until July 1998, these programs were conducted under different divisions within the department. Though they worked together, duplication of efforts was common in the documentation of worker fatalities. Now these two programs have been combined in the Division of Environmental Health and Communicable Disease Prevention's Office of Surveillance, where the documentation process has been streamlined into a seamless occupational fatality surveillance system.

The MO FACE surveillance system is designed to monitor, track and investigate all work-related fatalities in Missouri. With this system, coroners, medical examiners and emergency responders are being made more aware of what constitutes a worker fatality. The program provides an outlet to report a workplace fatality, as well as feedback on how and where this information is used.

MO FACE also conducts in-depth epidemiological investigations of work-related fatalities and works closely with employers involved in workplace fatalities to help them institute procedures to prevent similar incidents from occurring. The program also develops intervention initiatives, such as workshops and seminars, to help employers recognize workplace hazards and prevent fatalities before they occur.

The CFOI program is somewhat different. This program relies on notification from death certificates and worker compensation claims as well as information from the MO FACE program. The CFOI program collects more in-depth information about each fatality and provides statistical information not available through the MO FACE program. In contrast to the MO FACE program, which is conducted in only 21 states, the CFOI program is conducted in all 50 states, Washington DC and Puerto Rico. This makes possible comparison of fatality data from state to state.

Both surveillance programs use principles of epidemiology to monitor, track and investigate all occupational fatalities. "Epi-data" is collected on all work-related fatalities, which can include information about the fatalities of farmers, over-the-road truck drivers, skilled and unskilled laborers, construction workers and carpenters, and those who are self-employed. As with all epidemiological studies, prevention of the undesired event or disease is the ultimate outcome. With these programs, the prevention of traumatic work-related injuries and fatalities is achieved. Safety workshops and intervention seminars are conducted to train employers and employees on proper hazard recognition and avoidance.

Timely notification of work-related fatalities allows for more accurate data collection. Fatality reports from coroners and medical examiners, emergency responders, and the Occupational Safety and Health Administration (OSHA) are the backbone of the MO FACE active surveillance system. Though all fatalities are investigated, MO FACE has detailed investigation protocols for *Falls from Height* and *Machinery-Related* incidents. Occupational deaths are investigated, not to determine fault or legal liability, but to determine whether and how the fatality could have been prevented. Key points of any investigation include employer experience, worker experience and safety training. Another key component of interest is employee training and an employer-facilitated comprehensive safety program. Insight gained from past MO FACE investigations allows us to provide more effective prevention information to employers and their workers.

Nationally, the average rate of occupational deaths for 1992–1996 was 5.0 deaths per 100,000 workers. Missouri's average occupational death rate for the

(continued on page 21)

Staphylococcus aureus With Resistance to Glycopeptides, Including Vancomycin

Marge Borst, R.N., B.S., C.I.C.
Section of Communicable Disease Control and Veterinary Public Health

Since the emergence of methicillin-resistant *Staphylococcus aureus* (MRSA), vancomycin has been the first-line and only uniformly effective antimicrobial agent for the treatment of serious infections with MRSA. Of great concern was whether or not *Staphylococcus aureus (S. aureus)* could acquire glycopeptide resistance and become nonresponsive to vancomycin, resulting in staphylococcal infections with similar morbidity and mortality to that which characterized these types of infection in the pre-antibiotic era.

Three patients infected with *S. aureus* with intermediate resistance to the glycopeptide vancomycin (GISA/VISA; minimum inhibitory concentration [MIC] ≥8 µg/mL) have been reported in the United States. The Centers for Disease Control and Prevention (CDC) and other national experts fear that the frequency of vancomycin-resistant/intermediate *S. aureus* will increase rapidly over the next several years and become a major public health problem. Some reports to CDC suggest these pathogens may already be causing therapeutic difficulties, but are not being detected with current laboratory methods.

The most accurate form of antimicrobial susceptibility testing for staphylococci is a minimal inhibitory concentration method (broth dilution, agar dilution or agar-gradient diffusion) using a full 24-hour incubation. The laboratory should ensure the strain is in pure culture and reconfirm the genus and species of the organism: then repeat the susceptibility test for vancomycin using a minimal inhibitory concentration method.

Laboratory evidence suggests that the same mechanism of resistance which caused these strains of *S. aureus* to develop vancomycin MIC ≥8 µg/mL is present in methicillin- or oxicillin-resistant isolates with vancomycin MIC ≥4µg/mL. Therefore, these *S. aureus* strains with reduced susceptibility to vancomycin (MIC ≥4 µg/mL) should be considered a potential public health problem. Through information provided to CDC in collaboration with a proprietary surveillance system of 150 U.S. hospitals, CDC estimates that 0.6 percent of MRSA isolates exhibit reduced susceptibility to vancomycin (MIC ≥4 µg/mL), and each hospital reports approximately 200–700 MRSA isolates per year. Therefore, each hospital has on average one to three MRSA isolates with a vancomycin MIC ≥4 µg/mL.

In order to learn about the epidemiology of these *S. aureus* strains with reduced susceptibility to vancomycin, the Hospital Infections Program, CDC, has developed a nationwide case-control study that has recently received Institutional Review Board approval**.** The study will attempt to define risk factors for acquisition of these organisms, determine the risk of transmission, and assess the adequacy of the CDC recommendations in preventing transmission of these organisms.

CDC is requesting the cooperation of the Missouri Department of Health, local public health agencies, and hospital infection control staff with the following:

(a) Report *Staphylococcus aureus* with reduced susceptibility to vancomycin (**MIC ≥4 µg/mL**), and

(b) Assist with collection of additional medical information on infected patients with **confirmed** MIC ≥4 µg/mL who have been included in CDC's case-control study to define risk factors.

The Missouri Department of Health should be immediately notified of any *Staphylococcus aureus* with resistance as low as MIC ≥4 µg/mL, as well as those with intermediate (MIC ≥8 µg/mL) or greater resistance (MIC ≥32 µg/mL) to vancomycin. The isolate should be sent to the Missouri State Public Health Laboratory for confirmation. If confirmed by the state lab, the isolate(s) will be forwarded to CDC.

Infection control precautions, given on pages 11–12 of this issue, should be initiated promptly without waiting for confirmation.

Thus far, isolates brought to the department's attention as having intermediate or greater resistance to vancomycin, have, fortunately, all been confirmed as sensitive to vancomycin.

Please send all isolates of *Staphylococcus aureus* with reduced susceptibility to glycopeptides/vancomycin to:

State Public Health Laboratory
Attention: Sandy Hanauer
307 West McCarty Street
Jefferson City, Missouri, 65101

If you need assistance with how or when to send specimens, call Sandy Hanauer at (573) 751-0633.

For other questions, please call Marge Borst, RN, BS, CIC, Nurse Epidemiologist at (573) 751-6495 or (800) 392-0272.

Staphylococcus aureus With Reduced Susceptibility to Vancomycin (VISA)

Staphylococcus aureus is one of the most common causes of both hospital- and community-acquired infections worldwide. Since the emergence of methicillin-resistant *Staphylococcus aureus* (MRSA) in the 1980s in the United States, vancomycin has been the antimicrobial agent of choice for serious MRSA infections. In May 1996, *S. aureus* with reduced susceptibility to vancomycin (VISA; minimum inhibitory concentration [MIC] ≥8 µg/mL)) was first reported to have caused infection in a patient in Japan.[1]

By August of 1997, VISA-associated infection had been identified in the United States.[1]

The emergence of VISA in the United States may signal the eventual emergence of strains with full resistance to vancomycin and serious public health consequences. The Centers for Disease Control and Prevention (CDC) and the Hospital Infection Control Practices Advisory Committee have developed interim guidelines when isolates of VISA are identified.[2] Using these guidelines, each health care facility should develop a plan in which responsibilities for critical departments and personnel are clearly delineated.

TEAR OUT FOR FUTURE REFERENCE

Summary of Interim Guidelines for Prevention and Control of Staphylococcal Infection Associated With Reduced Susceptibility to Vancomycin

Preventing the Emergence of Vancomycin Resistance

Antimicrobial use is a major risk factor for the emergence of antimicrobial-resistant pathogens. Reduction of overuse and misuse of antimicrobials will decrease the risk for emergence of staphylococci with reduced susceptibility to vancomycin. Medical and ancillary staff members who are responsible for pharmacy formulary decisions should review and restrict use of vancomycin and ensure appropriate use of all antimicrobials.

Detection of Staphylococci with Reduced Vancomycin Susceptibility

Use of recommended laboratory methods (including media and incubation methods, antimicrobial susceptibility testing methods, and susceptibility breakpoints) for identifying VISA is essential.

When antimicrobial susceptibility testing indicates reduced vancomycin susceptibility or resistance, the specimen should be retested. After repeat testing, if species identification and vancomycin test results are consistent, send isolate(s) to the Missouri Department of Health State Public Health Laboratory (SPHL), Attention: Sandy Hanauer, 307 West McCarty Street, Jefferson City, Missouri, 65101, Ph: (573) 751-0633, and immediately report findings to the Missouri Department of Health, Section of Communicable Disease Control and Veterinary Public Health at (573) 751-6115 or (800) 392-0272.

It is recommended that staphylococci isolated from patients who fail to respond to vancomycin therapy be retested because resistance may have emerged during therapy.

Obtaining Investigational Antimicrobials

The susceptibility pattern of a particular staphylococcus strain, the site of infection, and the response to conventional therapy is important in determining the need for investigational antimicrobials to treat infections caused by staphylococci with reduced vancomycin susceptibility. Several antimicrobial agents in clinical development may be useful in treating vancomycin-resistant enterococci and methicillin-

resistant *S. aureus*. Some of these agents may also be useful in treating infections with reduced susceptibility to vancomycin. Physicians treating infections caused by staphylococci with reduced vancomycin susceptibility can obtain information about investigational drug therapies from the U.S. Food and Drug Administration's Division of Anti-Infective Drug Products at (301) 827-2120. The physician will be requested to send the isolate to CDC for microbiologic and epidemiologic evaluation.

Preventing the Spread of Staphylococci with Reduced Vancomycin Susceptibility

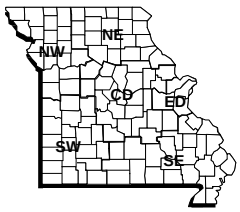
To prevent the spread of staphylococci with reduced susceptibility to vancomycin within and between facilities and to minimize the potential for the organism to become endemic, the following steps should be taken whenever VISA is isolated.

1. The laboratory should immediately notify infection control personnel, the clinical unit, and the attending physician. Isolate should then be retested and sent to SPHL for confirmation.
2. Infection control personnel, in collaboration with appropriate authorities (including the Missouri Department of Health and CDC), should initiate an epidemiologic and laboratory investigation.
3. Medical and nursing staff should:
   a. Isolate the patient in a private room and use contact precautions (gown, mask, glove, and antibacterial soap for handwashing);
   b. Minimize the number of persons with access to colonized/infected patients; and
   c. Dedicate specific health care workers to provide one-on-one care for the colonized/infected patient or the cohort of colonized/infected patients.
4. Infection control personnel/designees should:
   a. Inform all personnel providing direct patient care of the epidemiologic implications of such resistant strains and of the infection control precautions necessary for their containment;
   b. Monitor and strictly enforce compliance with contact precautions and other recommended infection control practices;
   c. Determine whether transmission has already occurred by obtaining baseline cultures (before initiation of precautions) for staphylococci with reduced susceptibility to vancomycin from the anterior nares and hands of all health care workers, roommates, and others with direct patient contact;
   d. Assess efficacy of precautions by monitoring health care personnel for acquisition of staphylococci with reduced susceptibility to vancomycin as recommended by consultants from the Missouri Department of Health or CDC;
   e. Avoid transferring infected patients within or between facilities, and if transfer is necessary, fully inform the receiving institution or unit of the patient's colonization/infection status and appropriate precautions; and
   f. Consult with the Missouri Department of Health and CDC before discharge of the colonized/infected patient.

REFERENCES:

1. CDC. Update: *Staphylococcus aureus* with reduced susceptibility to vancomycin—United States, 1997. MMWR 1997;46(35).
2. CDC. Interim guidelines for prevention and control of staphylococcal infection associated with reduced susceptibility to vancomycin. MMWR 1997;46(27).

If you have questions, please contact the Missouri Department of Health, Section of Communicable Disease Control and Veterinary Public Health at (573) 751-6115 or (800) 392-0272.



Missouri Department of Health
Division of Environmental Health and Communicable Disease Prevention

QUARTERLY DISEASE REPORT

Reporting Period*
October - December, 1998

	Districts											3 Month State Totals		Cumulative		
	CD	** ED	NE	** NW	SE	** SW	*** OTHER	Kansas City	St. Louis City	St. Louis Co.	Spfd. Greene Co.	1998	1997	For 1998	For 1997	5 YR MEDIAN
Vaccine Preventable																
Influenza	1	0	2	4	4	1		1	0	2	0	15	43	1089	270	272
Mumps	0	0	0	1	0	0		0	0	0	0	1	0	4	0	25
Pertussis	2	4	0	2	4	0		5	11	1	2	31	21	59	80	74
Measles	0	0	0	1	0	0		0	0	0	0	1	0	1	1	2
Viral Hepatitis																
A	2	1	2	13	3	17		8	1	2	50	99	288	637	1151	1338
B	2	4	2	6	3	11		9	18	2	9	66	101	252	360	437
C	0	0	0	0	0	2		0	0	0	2	4	0	14	6	N/A
Non-A Non-B	0	0	0	0	0	0		0	0	0	0	0	1	1	4	23
Unspecified	0	0	0	0	0	0		0	0	0	0	0	0	2	1	1
Meningitis																
Aseptic Meningitis	0	7	7	10	4	0		17	0	21	0	66	24	317	99	175
Meningococcal Disease	0	0	0	0	0	1		1	3	2	0	7	7	25	43	43
Meningococcal Other	0	0	0	0	2	0		1	2	2	0	7	20	55	63	N/A
Enteric Infections																
E. Coli O157:H7	0	1	0	1	4	5		1	0	6	0	18	13	55	58	48
Campylobacter	26	9	3	16	16	16		8	2	24	16	136	126	535	574	601
Salmonella	22	9	2	28	17	15		7	8	26	6	140	127	632	568	568
Shigella	7	6	0	14	2	21		6	11	54	2	123	38	221	222	654
Parasitic Infections																
Cryptosporidiosis	1	0	0	0	0	2		0	0	3	3	9	10	29	38	N/A
Giardiasis	32	24	3	18	6	32		15	19	63	16	228	255	790	800	774
Respiratory Diseases																
Legionellosis	0	1	0	2	0	0		0	0	1	0	4	19	18	26	26
Sexually Transmitted																
AIDS	16	7	4	1	5	8	12	28	37	18	8	152	144	501	489	178
HIV Infection	17	6	1	6	12	9	1	21	14	12	8	129	107	438	489	N/A
Chlamydia	283	72	76	309	190	248		698	776	597	****	3213	N/A	12466	N/A	N/A
Gonorrhea	126	32	19	102	82	48		801	1045	518	****	2753	2116	9385	7658	N/A
P & S syphilis	0	0	0	1	3	0		1	17	6	****	28	27	109	118	N/A
Tuberculosis																
TB Disease	1	3	1	5	1	3	1	7	10	6	0	38	49	184	248	N/A
TB Infection	137	58	46	61	55	38	122	179	304	151	60	1211	1000	5694	6205	N/A
Zoonotic																
Ehrlichiosis	0	0	0	0	1	0		0	0	1	0	2	5	12	20	N/A
Lyme-like Disease	0	0	0	0	1	0		0	0	0	0	1	13	12	28	53
Rabies (Animal)	1	1	0	1	6	1		0	0	0	1	11	9	42	31	30
Rocky Mountain Spotted Fever	0	0	0	0	0	0		0	0	0	1	1	2	5	24	22
Tularemia	0	0	0	0	0	0		0	0	0	1	1	7	12	18	18

Outbreaks
Foodborne - 2
Waterborne - 1
Nosocomial - 4
Pediculosis - 1
Scabies - 2
Fifth Disease - 1
Leptospirosis - 1
Shigella - 1
AGI - 2
Influenza - 1
Environmental Hazard - 1

Low Frequency Vaccine Preventable Diseases
Diphtheria
Hib Meningitis
Hib other invasive - 3
Polio
Rubella
Tetanus

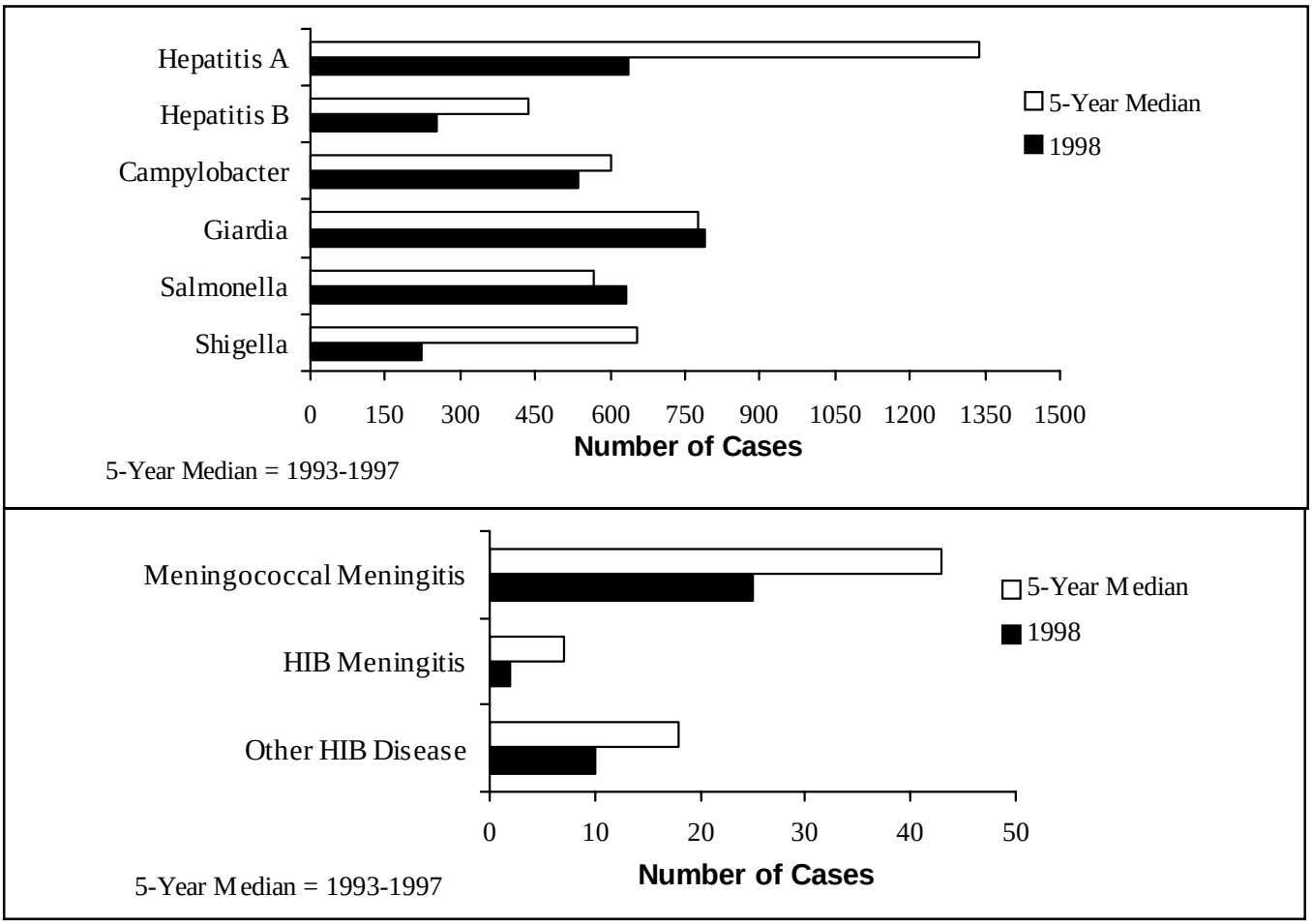
Low Frequency Diseases
Anthrax
Botulism
Brucellosis
Chancroid
Cholera
Encephalitis
Granuloma Inguinale
Kawasaki Disease - 2
Leptospirosis - 1
Listeria - 5
Lymphogranuloma Venereum
Plague
Psittacosis
Rabies (human)
Reye syndrome
Rheumatic fever, acute
Streptococcal Disease, Invasive, Grp A - 7
Streptococcus pneumoniae, Drug Resistant Invasive Disease
Toxic Shock Syndrome - 1
Trichinosis
Typhoid Fever - 2

*Reporting Period Beginning October 4, 1998 and Ending January 2, 1999.
**Totals do not include Kansas City, St. Louis City, St. Louis County, or Springfield
***State and Federal Institutions
****Included in SW District
N/A Data unavailable

Due to data editing, totals may change

TEAR OUT FOR FUTURE REFERENCE

Disease Reports, January–December 1998 and 5-Year Median



Viral Hepatitis

During the January–December 1998 time period, hepatitis A cases decreased to 637 cases, which is a 44.7% decline from the 1,151 cases reported in 1997. This is also a 52.4% decline from the five-year median of 1,338. The number of cases decreased in each district from 1997 to 1998.

Hepatitis B decreased 30% from 360 cases in 1997 to 252 cases in 1998. However, the total of 1998 cases was 42.3% lower than the five-year median of 437.

Enterics

Campylobacter decreased slightly by 6.8% during 1998, from 574 cases in 1997 to 535 cases in 1998. The total number of 1998 cases declined 11% from the five-year median of 601 cases. Salmonella increased by 11.3% from 568 cases in 1997 to 632 cases in 1998. Four of the six health districts showed an increase in salmonella cases. Central District increased 53.6% from 69 cases in 1997 to 106 cases in 1998. Eastern District increased 49.3% from 136 cases in 1997 to 203 cases in 1998. Shigellosis cases declined slightly from 222 in 1997 to 221 in 1998. This is a .5% drop. The 221 cases in 1998 represent a 66.2% decline from the five-year median.

Parasites

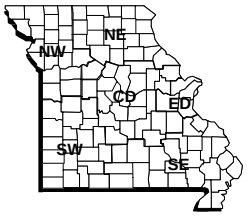
Giardiasis decreased slightly by 1.3% during 1998, from 800 cases in 1997 to 790 cases in 1998. However, this is a slight 2.1% increase above of five-year median of 774 cases.

Meningitis

Meningococcal meningitis decreased 41.9% during 1998, from 43 cases in 1997 to 25 cases in 1998. The five-year median is also 43 cases.

HIB Disease

Following no cases reported in 1996 and one case reported in 1997, two cases of *Haemophilus influenzae* type b (Hib) meningitis were reported in Missouri during 1998. The five-year median is 7 cases. Other invasive cases (non-meningitis) of *Haemophilus influenzae* that may not be affected by the vaccine increased 42.9% during 1998 from 7 cases in 1997 to 10 cases in 1998. However, the 10 cases of other invasive Hib disease reflected a decline of 44.4% from the five-year median of 18 cases.



Missouri Department of Health
Division of Environmental Health and Communicable Disease Prevention

QUARTERLY DISEASE REPORT

Reporting Period*
January - March, 1999

	Districts											3 Month State Totals		Cumulative		
	CD	** ED	NE	** NW	SE	** SW	*** OTHER	Kansas City	St. Louis City	St. Louis Co.	Spfd. Greene Co.	1999	1998	For 1999	For 1998	5 YR MEDIAN
Vaccine Preventable																
Influenza	88	30	43	21	23	37		23	57	231	66	619	1061	619	1061	204
Measles	0	0	0	0	0	0		0	0	0	0	0	0	0	0	1
Mumps	0	0	1	0	0	0		0	0	0	0	1	2	1	2	2
Pertussis	1	1	1	2	2	0		3	0	0	0	10	9	10	9	7
Viral Hepatitis																
A	6	4	1	5	22	15		11	2	1	44	111	178	111	178	196
B	2	2	2	3	4	9		13	0	2	9	46	63	46	63	114
C	0	0	0	1	0	2		26	0	1	0	30	3	30	3	N/A
Non-A Non-B	0	0	0	0	0	0		0	0	0	0	0	1	0	1	2
Unspecified	0	0	0	0	0	0		0	0	0	0	0	2	0	2	0
Meningitis																
Meningococcal Disease	1	2	0	3	1	1		4	0	9	0	21	8	21	8	21
Meningococcal Other	0	2	0	1	0	1		2	2	0	0	8	23	8	23	13
Enteric Infections																
Campylobacter	22	4	0	2	13	10		7	1	20	3	82	69	82	69	86
E. Coli O157:H7	1	1	1	1	1	1		0	0	0	0	6	3	6	3	2
Salmonella	9	6	3	6	3	13		9	4	17	5	75	69	75	69	81
Shigella	3	3	0	38	1	20		4	7	13	5	94	20	94	20	71
Parasitic Infections																
Cryptosporidiosis	1	0	0	0	0	0		1	1	1	1	5	1	5	1	N/A
Giardiasis	16	6	5	10	7	6		7	7	22	4	90	133	90	133	133
Respiratory Diseases																
Legionellosis	0	0	0	0	0	0		0	1	0	0	1	6	1	6	4
Sexually Transmitted																
AIDS	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
HIV Infection	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chlamydia	294	108	81	204	254	261		809	881	609	****	3501	2845	3501	2845	N/A
Gonorrhea	132	23	20	26	97	55		443	630	416	****	1842	1638	1842	1638	N/A
P & S syphilis	4	0	0	0	0	0		1	20	6	****	31	34	31	34	N/A
Tuberculosis																
TB Disease	2	1	1	2	4	4	0	4	10	7	2	37	38	37	38	N/A
TB Infection	75	32	55	41	43	37	103	202	326	216	40	1170	1300	1170	1300	N/A
Zoonotic																
Ehrlichiosis	0	0	0	0	0	0		0	0	0	0	0	0	0	0	N/A
Lyme-like Disease	0	0	0	0	0	0		0	0	0	0	0	0	0	0	6
Rabies (Animal)	0	0	0	0	4	0		0	0	0	1	5	8	5	8	8
Rocky Mountain Spotted Fever	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0
Tularemia	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0

Outbreaks
Acute Respiratory Illness - 2
Clostridium difficile - 1
Influenza - 6
Influenza-like - 16
Norwalk-like - 2
Scabies - 1
Shigella - 2
Strep - 1

Low Frequency Vaccine Preventable Diseases
Diphtheria
Hib Meningitis
Hib other invasive - 10
Polio
Rubella
Tetanus

Low Frequency Diseases
Anthrax
Botulism
Brucellosis
Chancroid
Cholera
Encephalitis
Granuloma Inguinale
Kawasaki Disease - 3
Leptospirosis
Listeria - 4
Lymphogranuloma Venereum
Plague
Psittacosis
Rabies (human)
Reye syndrome
Rheumatic fever, acute
Streptococcal Disease, Invasive, Grp A - 27
Streptococcus pneumoniae,
Drug Resistant Invasive Disease
Toxic Shock Syndrome - 6
Trichinosis
Typhoid Fever

*Reporting Period Beginning January 3 and Ending April 3, 1999.
**Totals do not include Kansas City, St. Louis City, St. Louis County, or Springfield
***State and Federal Institutions
****Included in SW District
N/A Data unavailable

Due to data editing, totals may change

TEAR OUT FOR FUTURE REFERENCE

Missouri Morbidity and Mortality Reports of Selected Communicable Diseases - 15 Year Report

	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989	1988	1987	1986	1985	1984
AIDS	466	501	845	769	727	1644	657	651	596	478	401	240	91	52	28
Brucellosis	3	2	2	0	0	0	0	3	1	2	4	14	4	12	7
Campylobacter	535	574	554	601	631	616	614	602	547	473	441	260	281	304	260
Chickenpox	6362	6319	5830	8840	10147	9609	10009	7678	10591	9086	11350	8595	5093	2474	2565
Chlamydia	12655	12257	11952	12084	12244	11625	11907	10643	11151	8151	6239	2944	1532	412	9
Encephalitis, Inf.	0	9	5	11	14	26	16	22	12	6	8	11	13	12	11
Giardiasis	790	800	777	761	774	770	739	790	878	859	654	690	516	458	462
Gonorrhea	9463	7658	8415	11302	12555	13147	14887	17450	20012	21053	17241	16491	19029	20023	20042
Haemophilus influenzae type B															
Meningitis	2	1	0	10	7	12	22	42	88	106	138	131	172	108	104
Other Invasive	10	7	8	18	44	123	59	39	57	-	-	-	-	-	-
Hepatitis A	637	1151	1414	1338	619	1443	1500	653	619	810	897	560	126	98	138
Hepatitis B	252	360	326	437	538	585	535	549	633	704	639	460	420	359	297
Hepatitis C	14	6	-	-	-	-	-	-	-	-	-	-	-	-	-
Non A, Non B	1	4	23	23	32	25	27	31	42	53	50	46	39	42	18
Unspecified	2	1	0	1	1	19	9	15	19	13	21	21	15	24	46
Influenza (confirmed)	1089	270	283	491	163	272	111	462	220	293	148	69	78	61	39
Lyme Disease	12	28	52	53	102	108	150	207	205	108	-	-	-	-	-
Malaria	15	16	11	9	14	9	12	9	13	13	6	8	12	5	8
Meningitis, Mening.	25	43	57	54	43	34	32	37	31	21	33	35	40	46	53
Meningitis, Other	55	63	41	22	35	-	-	-	-	-	-	-	-	-	-
Mumps	4	0	10	25	44	46	39	40	62	87	68	38	23	18	11
Pertussis	59	80	74	63	45	144	120	83	116	141	25	46	32	35	23
Polio, all forms	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0
Rabies, Animal	42	31	26	30	27	35	37	28	30	62	36	59	75	59	70
RMSF	5	24	19	30	22	20	24	25	36	48	54	26	25	10	14
Rubella	2	2	0	0	2	1	1	5	3	4	0	0	1	7	0
Rubeola	1	1	3	2	161	1	0	1	103	671	65	190	32	5	6
Salmonellosis	632	568	565	577	642	529	426	616	723	676	772	660	728	690	617
Shigellosis	221	222	387	1138	654	674	742	259	284	411	607	471	89	143	244
Syphilis, Total	384	505	603	1271	1985	2499	1940	926	598	388	473	328	494	578	712
Primary & Secondary	109	118	221	584	987	1354	1167	572	272	162	154	90	110	133	186
Tetanus	0	0	1	3	1	1	1	1	0	4	1	1	2	3	6
Tuberculosis	184	248	224	244	260	256	245	254	312	278	275	339	338	311	354
Tularemia	12	18	9	25	24	17	34	44	33	39	45	58	32	35	40
Typhoid Fever	4	1	2	3	1	2	3	2	4	2	3	7	6	6	6
Yersinia enterocolitica	16	30	16	21	40	26	37	48	32	36	30	10	6	2	3

State Public Health Laboratory - 1998 Annual Report

Metabolic Disease Screening

Infants screened 77,987
Presumptive positives:
- PKU 10
- Hypothyroidism 185
- Galactosemia 27
- Sickle Cell 58
- Other hemoglobinopathies 1,383

Serology/Virology

HIV Serology 75,759
- HIV antibody positive 610

Syphilis Serology 33,152
Sero-confirmed reactive 1,103

Hepatitis A Serology 554
- Positive 112

Hepatitis B Serology 8,138
- Positive 95

Measles, Mumps and Rubella (Diagnostic Serologies) 9,214
- Measles (IgM positive) 1
- Mumps (significant rise in titer) 1
- Rubella (IgM positive) 11
- Prenatal rubella screens 9,135
  - Nonreactive patients 1,050

Viral Isolation 2,160
- Influenza isolates 109
- Enterovirus isolates 58
- Herpes isolates 437

Rabies 2,886
- Positive specimens 42

Microbiology

Enterics 1,673
- *Salmonella* 880
- *Shigella* 136
- *Campylobacter jejuni* 26
- *E. coli* O157:H7 65

Parasitology 3,547
- Ova/parasites found 828

Reference Bacteriology 1,480
- *Francisella tularensis* 5
- *Haemophilus influenzae* 34
- *Neisseria meningitidis* 82
- *Bordetella pertussis* 72

DNA Probe for Chlamydia/Gonorrhea 73,502
- *N. gonorrhoeae* 1,396
- *Chlamydia trachomatis* 3,861

Tuberculosis 9,268
- Positive Cultures 561

Environmental Testing

Chemistry 15,679
- Blood lead samples 14,111
- Total analyses 25,050
- Blood lead ≥20µg/dL 236
- Environmental lead samples 480

Bacteriology—Water

Private Samples 10,936
- Coliform positive 2,704

Public Supplies 61,363
- Coliform positive 2,031
- *E. coli*/fecal coliform positive 200

Swimming Pools 1,624

Food/Dairy/Beverage 3,433
- Excessive bacteria, coliform, yeast and mold 107

Tick-Borne Disease Summary – 1998

F. T. Satalowich, D.V.M., M.S.P.H.
Section of Environmental Health and Communicable Disease Prevention

The tick can be defined as an eight-legged, blood-sucking arachnid parasite of the superfamily Ixodoidea. There are four developmental stages: egg, larva, nymph and adult. Seed ticks are the larva stage of all ticks. The larvae of all ticks are six-legged, which after moulting emerge as eight-legged nymphs.

The foreleg tarsi of all ticks have a unique sensory apparatus, called the Haller's organ, utilized for sensing chemical stimuli, odor, temperature, humidity and other life stimuli. The action of this organ allows the tick to select the animal on which to feed. Pheromones stimulate group assembly, species recognition, mating and host selection in ticks. All ticks are divided into two subfamilies:

- **Argasidae or Soft Ticks**—Include the genera *Argas*, *Otobius*, *Antricola* and *Ornithodoros*. There are over 155 species. Argasidae are highly specialized for sheltering, parasitizing and feeding on only a single kind of vertebrate that enters their microhabitat. After a blood meal, the female deposits a few hundred eggs in several batches.

- **Ixodidae or Hard Ticks**—Include the genera *Boophilus*, *Amblyomma*, *Dermacentor*, *Haemaphysalis*, *Hyalomma*, *Ixodes*, *Rhipicephalus* and *Rhipicentor*. There are over 650 species of Ixodidae. Egg batches are larger, ranging from 1,000 to 4,000, and may be as high as 12,000. Although most species are host specific, there are deviations. The proximity of acceptable hosts, air temperature gradients and atmospheric humidity during resting and questing periods are among the numerous factors that regulate the development of each stage.

Figure 1. Amblyomma americanum

Figure 2. Amblyomma maculatum

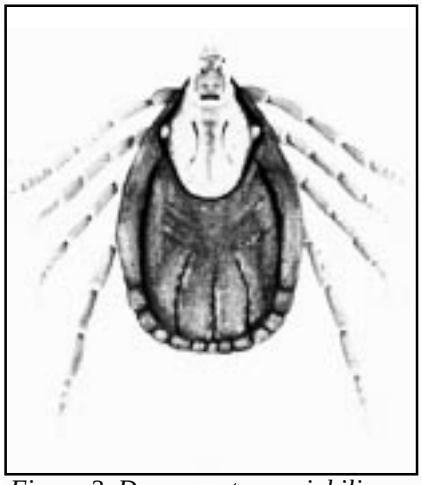


Figure 3. Dermacentor variabilis

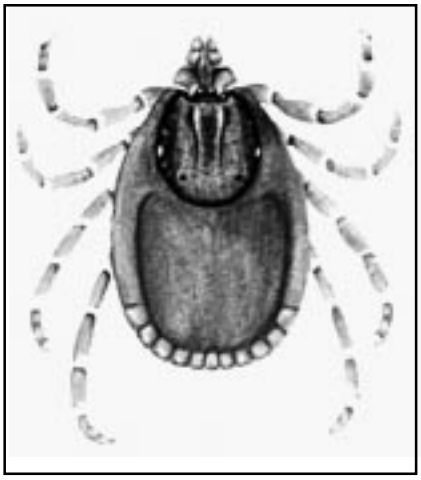


Figure 4. Rhipicephalus sanguineus

Ticks of Missouri

Missouri, with its natural climatic conditions of heat and moisture, is an ideal ecological setting for an abundance of tick species. The ticks usually found in Missouri are:

- *Amblyomma americana* or Lone Star Tick—Considered the primary vector of tularemia in Missouri. See Figure 1.

- *Amblyomma maculatum*—Considered a probable vector of tularemia and possibly Rocky Mountain Spotted Fever (RMSF) in Missouri. See Figure 2.

- *Dermacenter variabilis* or American Dog Tick—Considered the primary vector of RMSF in Missouri. See Figure 3.

- *Rhipicephalus sanguineus* or Brown Dog Tick—Considered the vector of ehrlichiosis in dogs in Missouri. At one time considered a vector of ehrlichiosis in humans, but this theory has not been proven. See Figure 4.

- *Ixodes scapularis* or Deer or Wood Tick—Considered the possible vector of borreliosis in Missouri.

While the above ticks are thought to be the prime vectors of specific diseases, it does not mean that *Amblyomma americana* could not transmit RMSF, ehrlichiosis or a *Borrelia* species. The primary vectors for ehrlichiosis and borreliosis are not known in Missouri. From a purely scientific perspective, if a specific species of tick has the anatomic physiological capability to transmit a disease, it could be assumed that they could be capable of transmitting another disease. Indeed this does sporadically happen. The *Amblyomma americana* has the capability to transmit tularemia and RMSF. It has been successfully infected with *Borrelia burgdorferi* in the laboratory and found to transmit the organism. However, it did not remain infected. What the role of this tick is in the transmission of Borreliosis in nature is not known.

In nature there are many variables that affect a specific organism, the ecology of the specific tick species and the environment that make a specific species a viable vector of a specific disease. Unfortunately, all of these factors are not known nor understood. What is known is that a human is not the natural host for any tick. The above-mentioned ticks may bite humans as a means of last resort or of favorable opportunism. Since humans are not the normal host, the *Amblyomma* and *Dermacentor* species must spend four to six hours acclimating to the human host prior to taking a blood meal and thus transmitting the disease. The *Ixodes* species must acclimate for 12–20 hours to the human host prior to taking a blood meal and thus transmitting disease. The tick may be attached by inserting its mouth parts into the skin, but does not start a blood meal, and thus, cannot regurgitate the organism into the new host.

Of the millions of vector ticks in nature, only a small percent are likely to be infected when a person is bitten. In population studies of ticks, if three to five percent are found to be infected with a disease organism, it is considered high. Thus most ticks are not carriers of disease, and requests to have individual ticks tested for disease organisms are usually not productive or cost effective. Tick feeding activity does produce host reactions caused by the ticks salivary fluids and toxins, and skin wounds which are susceptible to secondary bacterial infections. This local reaction at times can be very severe.

Epidemiology of Tick-Borne Diseases

Historically, each of the tick-borne diseases affects 20–60 individuals per year in Missouri. RMSF accounts for 90 percent of the rickettsial diseases that occur annually in the United States. During the 1980s, approximately 50 deaths per year in the United States were attributed to RMSF. An endemic focus for RMSF exists in Missouri, Arkansas, Oklahoma and Texas. In 1998, five cases of RMSF were reported in Missouri. The highest number of cases in Missouri, 54, was reported in 1988. The ten year average is 25.3 cases per year.

Tularemia is enzoonotic in animals in Missouri. This tick-borne disease in Missouri has declined from an average of 35 cases per year over the past 15 years to a record low of only nine cases reported in 1996. In 1998, 12 cases of tularemia were reported in Missouri. The ten-year average is 25.5 cases per year.

(continued on page 28)

Table 1. Reporting Criteria for Tick-Borne Diseases
(A confirmed case meets both clinical and laboratory criteria.)

	Ehrlichiosis	Tularemia	Rocky Mountain Spotted Fever	Borelliosis*
Clinical	Tick exposure, acute onset, febrile myalgia, headache, rigor, malaise	Several disease forms, ulceroglandular, intestinal, pneumonic	Tick exposure, acute onset, febrile, myalgia, headache, petichial rash	Characteristic erythematous rash >5 cm in diameter **OR** Chronic manifestations
AND				
Laboratory	Four-fold titer rise in IFA for *E. canis* or *E. chaffeensis* **or** PCR **or** *Intracytoplasmic morulae* + IFA >64	Isolate *F. tularensis* **or** four-fold titer rise for *F. tularensis* antigen	Four-fold titer rise in IFA for *Rickettsia rickettsii* **or** PCR **or** isolate	Isolation of *B. burgdorferi* **or** EIA + Blot** **or** IFA + Blot**

* Lab methods are not decisive in Missouri and are not required for confirmation.
** Blot is positive for IgM if 2 of the following bands are present: 24kDa, 39kDa, and 41 kDa, and positive for IgG if 5 of the following bands are present: 18 kDa, 21 kDa, 28 kDa, 30kDa, 39 kDa, 41 kDa, 45 kDa, 58 kDa, 66 kDa, and 93 kDa.

1998 Mosquito-Borne Disease Surveillance Program

F. T. Satalowich, D.V.M., M.S.P.H.
Division of Environmental Health and Communicable Disease Prevention

The Department of Health conducted surveillance programs for St. Louis (SLE), Western Equine (WEE), California (CE) and LaCrosse (LAC) encephalitis during the 1998 mosquito season. The following active surveillance systems were operational during that period:

- Active Surveillance of Human Cases of Disease
- Active Surveillance for Equine Cases of Disease
- Active Surveillance for Arbovirus Activity in Wild Birds
- Active Surveillance for Arbovirus Activity in Mosquitoes

The Veterinary Medicine Diagnostic Laboratory (VDML) at the University of Missouri–Columbia tested human, horse and avian serology specimens via contract. All sera were tested using an Enzyme Linked Immunosorbent Assay (ELISA) technique designed for detection of IgM antibody specific for the above viruses. Suspect positives were submitted to the Centers for Disease Control and Prevention (CDC) at Fort Collins, Colorado for confirmation.

Active Surveillance for Human Cases of Disease

Human arbovirus surveillance activities consisted of standard reporting by physicians in addition to statewide telephone contact with approximately 88 pre-designated key hospitals on a weekly basis through the sentinel active surveillance system. Eight human sera were tested for SLE, one for Eastern encephalitis, and three for Western encephalitis. All samples tested negative. The active surveillance system for human cases of encephalitis detected no human arboviral cases in Missouri.

Active Surveillance for Equine Cases of Disease

Thirteen veterinarians throughout the state were contacted by telephone on a weekly basis. All reports indicated no arboviral activity in horses in Missouri in 1998. Three equine sera were analyzed by the VMDL. All three were negative for SLE, WEE and Eastern Equine Encephalitis (EEE).

Active Surveillance for Arbovirus Activity in Wild Birds

Trapping of wild birds began on June 17 and concluded on October 14, 1998 via a cost-reimbursement contract with the United States Department of Agriculture–Wildlife Service (USDAWS). Blood specimens from a total of 1,005 wild birds, comprised primarily of House Sparrows (*Passer domesticus)*, were collected. Bird collection sites were chosen from the following 12 counties: Boone, Buchanan, Cape Girardeau, Callaway, Davies, Jackson, Lawrence, Lewis, Marion, New Madrid, St. Charles and St. Louis. Japanese mist nets were deployed at locations in close proximity to livestock and human activity (i.e. horse stables, dairy farms, hog lots and sheep farms). Collections from each geographic area were made at approximately two to three week intervals. Analysis of blood specimens provided no evidence that viral activity was occurring in the sampled bird populations.

Active Surveillance for Arbovirus Activity in Mosquitoes

Mosquito collections were conducted in the eastern Missouri counties of Cape Girardeau and St. Louis and the city of St. Louis. Because these areas were most devastated by the 1993–95 floods, they serve as an excellent representative of the mosquito ecological set. Adult mosquito collections varied by site, but as a whole began on June 1, 1998 and terminated on September 11, 1998. Trapping was accomplished with CO_2 baited CDC and EVS Light Traps, Reiter Gravid Traps, and hand collection at selected resting stations by aspirator.

The Virology Laboratory at Southeast Missouri State University assayed potential vector mosquitoes for SLE, WEE, EEE, and LAC antigens by Antigen Capture ELISA. Pools included approximately 50,325 specimens of *Culex pipiens, Culex restuans, Culex salinarius, Culex tarsalis, Aedes triseriatus,* and *Aedes albopictus. Culex pipiens* complex mosquitoes were assayed for SLE and WEE; *Coquillettidia perturbans* and *Aedes albopictus* were tested for EEE; and *Aedes albopictus* and *Aedes triseriatus* were assayed for LAC antigen. A total of 1,719 pools of mosquitoes were tested. All tests were negative, indicating that arboviral activity was not occurring or could not be detected in mosquitoes in these areas.

On July 30, 1998, the Bureau of Veterinary Public Health was informed by the VMDL, the USDA Virology Laboratory and a poultry producer of possible EEE in a confinement turkey breeding operation in Lawrence County. Approximately 40,000 turkeys located in three different houses had experienced a disease condition resembling EEE. All birds had supposedly spent their entire lives within a ten-mile radius, although they had been at a total of three different sites within that area. The question to be addressed in this situation was whether this confinement flock had served as a natural sentinel flock. Was it possible that the flock had been infected with EEE by mosquitoes in the area, or was it possible that the hatching eggs had been brought in from an area where

EEE was endemic. The EEE virus had never been isolated in Missouri.

Original test sera from the flocks were obtained from the USDA laboratory to be retested at the VMDL utilizing the antigen ELISA capture technique. The poultry producer provided current statistical samples of sera for synchronized testing. Under the Department of Health (DOH) contract with USDAWS, arrangements were made to capture wild birds at the three sites within the area. Under the DOH contract with Southeast Missouri State University's Virology Laboratory, arrangements were made to collect mosquitoes from the three sites within the area. The CDC Entomology Laboratory at Fort Collins, Colorado was alerted and performed confirmatory tests. Analysis of results confirmed that the confinement turkey flocks had been infected with the Highland J virus, not EEE. This is a virus that occurs in turkeys, but does not affect humans.

Satellite Conference on Influenza

September 28, 1999
10:00 a.m. to Noon

GOAL: Enable participants to prepare for the 1999–2000 influenza season with an update on influenza surveillance, laboratory testing and provision of vaccine.

AGENDA:

- Surveillance systems for influenza (active, passive, sentinel)
- Hong Kong investigation potential for pandemic
- Influenza vaccine composition—How is it decided
- Pneumovax
- Laboratory tests and what is needed for each.....and more

TARGET AUDIENCE: Local public health agency staff, infecton control nurses and hospital staff.

For more information, contact your local public health agency or Nancy Bush at the Missouri Department of Health at (573) 751-6058.

Sponsored by the Missouri Department of Health
and the Centers for Disease Control and Prevention.

Occupational Fatality Surveillance Systems

(continued from page 9)
same time period was slightly higher at 5.2 deaths per 100,000 workers. Missouri's 1997 occupational death rate was 4.2, which is lower than the national rate of 4.7.* Currently, the leading causes of occupational death in Missouri are motor vehicle accidents, assaults and violent acts, contact with objects or machinery, falls, and electrocution.

Missouri industries with the highest number of fatal incidents are agriculture/forestry/fishing, construction, transportation/public utilities and service-oriented businesses.

Agriculture/forestry/fishing accounted for 20 fatalities in 1997 and remains a leading industry for workplace deaths. Tractor-related incidents were the leading contributor, with "being struck by the tractor during a rollover" the primary cause. Farmers using tractors to mow grass, pull stumps and pull logs out of the woods, were just some of the fatalities in this industry.

The **construction** industry had a total of 21 fatalities in 1997 ranging from falls from heights, struck by moving or falling objects, to electrocution. The most common type of fatality incident in construction is fall from height. Being struck by falling objects or by equipment is also common. Lack of workplace hazard awareness is one of the many causes of construction-related deaths.

The **transportation/public utilities** industry accounted for 22 fatalities in 1997. Persons working in this category are often truck drivers or electrical linemen working for the local utility company. Victims are usually involved in single or multiple motor vehicle accidents or electrocuted while working on an electrical line.

The **service** industry had 19 incidents in 1997, mostly related to motor vehicle accidents where the individual was in transit from one service call to the next. There are vehicle vs. train accidents, falls and electrocutions. Service workers face a large variety of dangers and should be aware of these hazards that exist around them.

The loss of a life is a tragic event. When a worker death could have been prevented, it makes the event even more tragic. Employers must provide a safe and healthful environment for their workers. Workers need to be trained on how to recognize known hazards and the proper avoidance techniques. The information learned from these incidents in the workplace must be put to use to prevent additional deaths. The MO FACE and CFOI programs exist to provide prevention information to employers and employees across the state of Missouri. Together, these programs can help eliminate worker deaths throughout the state.

* The 1997 rate was calculated using Current Population Survey employment data and is considered experimental.

Hazardous Substances Emergency Events Surveillance 1998 Annual Report*

Carol Braun
Peggy Fischer
Office of Surveillance

Case Definition for Hazardous Substance Release

A hazardous substance release is entered in the HSEES system if it meets the following criteria:

1. An uncontrolled or illegal release or threatened release of one or more hazardous substances; and
2. The substances that are actually released or threatened to be released include ALL hazardous substances except petroleum products; and
3. The quantity of the hazardous substances that are released, or are threatened to be released, need (or would need) to be removed, cleaned up, or neutralized according to federal, state or local law; or
4. Only a threatened release of hazardous substances exists, but this threat leads to an action such as an evacuation that can potentially impact on the health of employees, responders or the general public. This action makes the event eligible for inclusion into the surveillance system even though the hazardous substances are not released.

The Hazardous Substances Emergency Events Surveillance (HSEES) program, established by the federal Agency for Toxic Substances and Disease Registry (ATSDR) in 1990, collects information on the direct public health impact of emergency events involving hazardous substances. Missouri's HSEES program receives notifications of incidents involving hazardous substances from several sources, including the Missouri Department of Natural Resources' Environmental Services Program, the United States Coast Guard's National Response Center, the federal Department of Transportation's Hazardous Materials Information System, the Missouri State Highway Patrol, and the media. Information about specific hazardous substance emergency events is obtained from the Missouri departments of Agriculture, Conservation, Public Safety, and Highway and Transportation, regional environmental agencies, local public health agencies, responders, incident commanders, responsible parties, facility and transportation managers, hospitals, employees, witnesses, and victims.

The Missouri HSEES program has completed its fifth year of data collection. As the program continues, new notification and data sources are explored, and information is shared and analyzed to determine the public health impact of emergency events involving the release of hazardous substances in the state. All Missouri HSEES data are transmitted to ATSDR for analysis with the data collected from the other 13 participating states. Personal/company identifiers are not transmitted to, or maintained by, ATSDR to protect the confidentiality of program participants.

Because the intent of the HSEES program is to reduce the morbidity and mortality related to hazardous substances emergency events, it is important that the public, emergency responders, employees and industries receive feedback from the program concerning case investigations. In those cases where development of intervention strategies might prevent similar future incidents, specific summary investigation reports are prepared and distributed to the community involved. When appropriate, health education programs to promote prevention strategies are conducted for the affected industry, local emergency planning committees, emergency responders, etc.

Analysis of Data on Hazardous Substances Emergency Events

In calendar year 1998, there were 196 incidents that met the hazardous substances emergency event case definition (see sidebar). Of this total, 192 events included actual releases of hazardous substances. Actual (not threatened) releases occurred in 161 (82.1%) events. Thirty-one (15.8%) involved both actual and threatened substance releases, and four events (2.0%) involved only threatened releases.

* Data provided in this report for 1998 are preliminary. This report was supported by funds from the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) trust fund provided to the Missouri Department of Health under Cooperative Agreement Number U61/ATU780955-02 from the Agency for Toxic Substances and Disease Registry, Public Health Service, U.S. Department of Health and Human Services.

Of the 192 events involving an actual hazardous substance release, the majority (187, or 97.4%) involved the release of only one substance and five (2.6%) involved the release of two substances. The most commonly released substance was ammonia and ammonia compounds, occurring in 35 (18.2%) events. Other commonly released substances and number of occurrences were acids or mixtures containing acids (30, or 15.6%) and mercury (12, or 6.3%).

Events were scattered throughout the state, occurring in 58 counties and the City of St. Louis. This represents 51.3 percent of the counties in the state. Events occurred primarily in counties where there are larger cities, interstate highways and large manufacturing or mining facilities. See Figure 1 for the number of events occurring in each county.

Of the total 196 events, 170 (86.7%) occurred on weekdays and 26 (13.3%) occurred on weekends. Actual number of events occurring by day of the week are: Sunday (13), Monday (39), Tuesday (34), Wednesday (42), Thursday (30), Friday (25), and Saturday (13).

Evacuations were ordered by an official in 23 (11.7%) events. Eighteen evacuations involved a total of 4,761 people. The number of people evacuated in five events is unknown. Thirteen evacuations involved a building or an affected part of a building, five evacuations were within a specified radius of a release, three evacuations were downwind, one evacuation was both within a specified radius and downwind, and one evacuation was made with no defined criteria for the evacuated area. One event, involving a tire fire and the release of an unknown quantity of magnesium, had the largest number of people evacuated. The close proximity of 3,000 gallons of propane and a 30,000 gallon tank of methanol, as well as air pollution from the burning tires, prompted the evacuation of approximately 3,000 people within a one-mile radius.

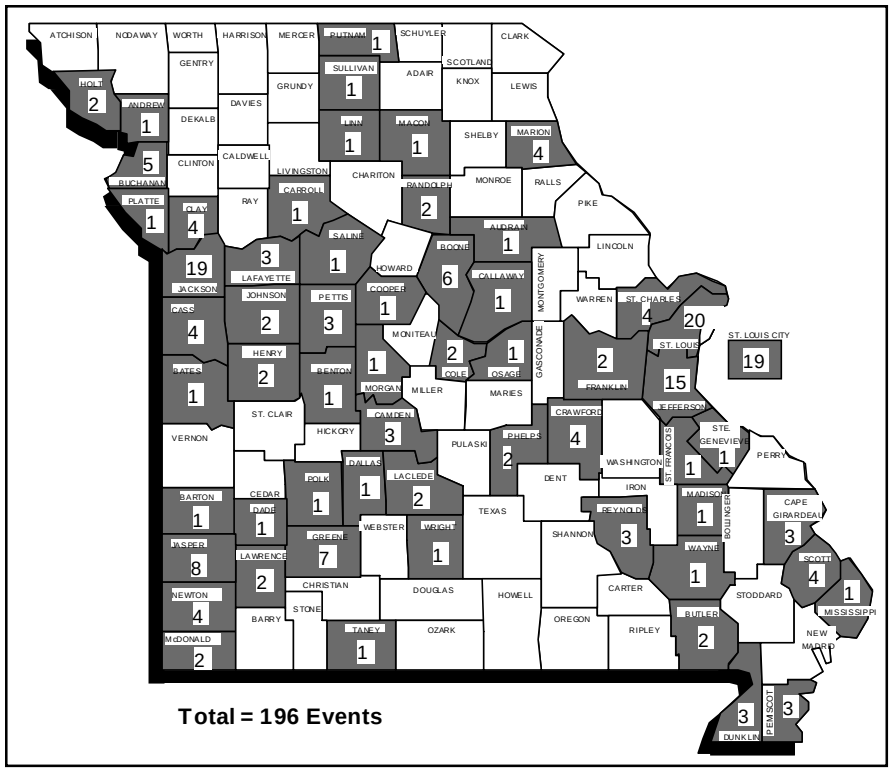


Figure 1. Location of non-petroleum hazardous substances emergency events by county, Missouri, 1998.

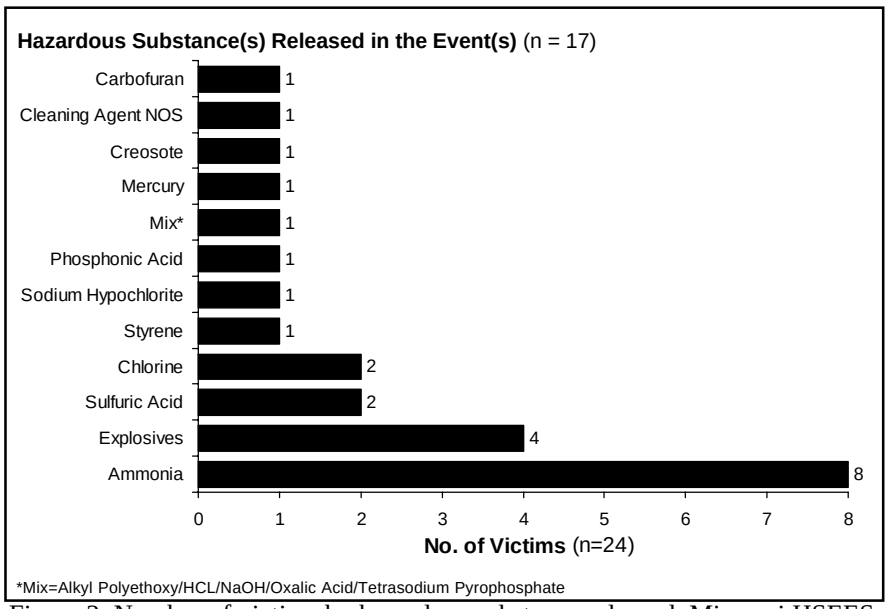


Figure 2. Number of victims by hazardous substance released, Missouri HSEES, 1998.

One hundred forty-five (74.0%) of the releases occurred in fixed facilities while 51 releases (26.0%) were transportation-related. Most of the fixed-facility releases (64, or 44.1%) were due to equipment failure, 39 (26.9%) were due to operator error, four (2.8%) were due to improper filling, overfill, and one (0.7%) was due to improper mixing of substances. Other factors contributed to releases in 26 (17.9%) events, and in the remaining 11 (7.6%) events, the cause or contributing factors were

(continued on page 24)

(continued from page 23)
unknown. Of the 51 transportation releases, 42 (82.4%) were ground transportation and nine were rail transportation. Fixed facility events resulted in 21 (87.5%) victims and transportation events resulted in three (12.5%) victims, with a total of 24 victims resulting from 17 events.

Seventeen (8.7%) releases involving 12 different substances (see Figure 2 on page 23) resulted in 24 persons with single or multiple injuries (40 total injuries). The largest number of victims associated with a release was four. The most common types of injuries reported were respiratory irritation (10), trauma (6), chemical burns (5), and eye irritation (4). Other injuries experienced included nausea/vomiting, thermal burns, headache, dizziness, chest pain, shortness of breath and elevated blood mercury level. See Figure 3.

Of the 24 victims, twenty were employees, one was a responder, one was a member of the general public, and two were professional fire fighters.

One person was treated at the scene of the event, 14 were treated at but not admitted to a hospital, seven were admitted to a hospital, and two people died.

The two deaths occurred at fixed facilities. An explosion of an unknown quantity of detonators at an explosive incinerator resulted in four employee victims, including one death. In a separate event, a death occurred when an employee mistakenly released a pressurized door of a wood treatment vessel. While only a small quantity of creosote was released, the trauma of the door striking another employee resulted in the death.

Reporting Events

The Missouri HSEES program is indebted to the Missouri Department of Natural Resources' Environmental Services Program for helping to investigate these hazardous substances

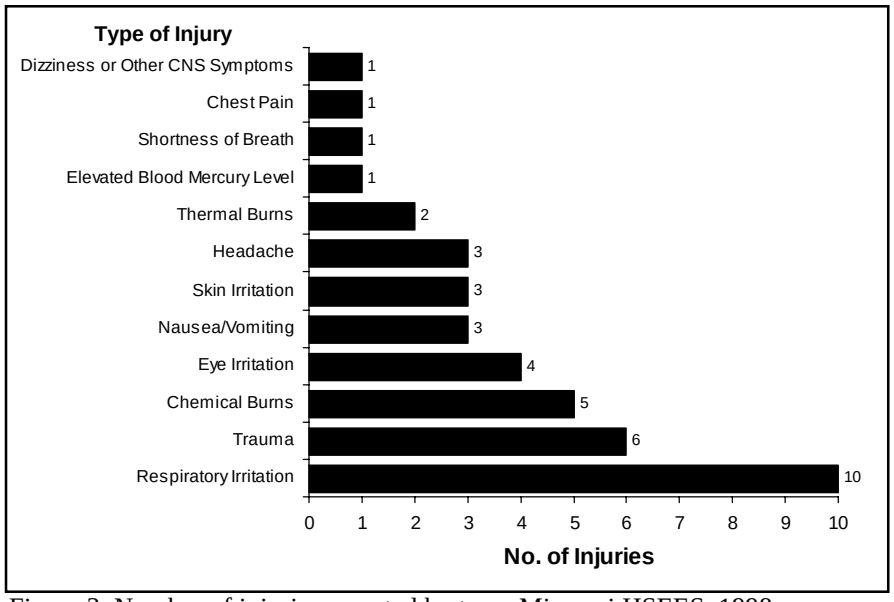


Figure 3. Number of injuries reported by type, Missouri HSEES, 1998.

emergency events. The program relies heavily on the Department of Natural Resources for notification of releases and frequently contacts them for circumstances surrounding a release.

If you are aware of an emergency event involving the release of non-petroleum, hazardous substances that may not have been reported to the Missouri Department of Natural Resources, please contact: Peggy Fischer, HSEES Coordinator, Missouri Department of Health, P.O. Box 570, Jefferson City, MO 65102-0570, Ph: (573) 526-1686.

Section for Environmental Public Health

(continued from page 5)
participants in the study area and 74 participants in a comparison area. The second sampling was performed in July 1996, approximately four months after the incinerator began operation. Second-round blood samples were taken from 75 of the original 76 participants in the study area and from 70 of the original 74 participants in the comparison area. The third and final sampling was conducted June 19–24, 1997.

Analysis of study results showed no increase in blood-dioxin levels during the incinerator's operation in the study population (persons living near the incinerator) or in the comparison population (persons living away from the incinerator). In fact, blood dioxin levels in both populations decreased between the first and third samples. The average tetrachlorodibenzo-p-dioxin (TCDD) concentration in study area participants was 1.79 parts per trillion (ppt) in the first sampling and 1.34 ppt in the third round. In comparison, the average TCDD in the participants from the comparison area for the first and third rounds were 1.46 and 1.23 ppt, respectively. The study concluded that incineration of TCDD contaminated soil and other material at the Times Beach incinerator did not result in any measurable exposure to the population surrounding the incinerator as indicated by serum TCDD levels.

The draft report for public comment was released May 12, 1998. For more information, contact the section at (800) 392-7245.

Vaccine-Preventable Disease 1998 Annual Report

Susan Denny
Section of Vaccine-Preventable and Tuberculosis Disease Elimination

As the incidence of vaccine-preventable diseases in Missouri has continued to decline, the Section of Vaccine-Preventable and Tuberculosis Disease Elimination and the Office of Surveillance have intensified efforts to collect complete and accurate information on remaining cases. “The reason for collecting, analyzing, and disseminating information on a disease is to control that disease.”[1]

With accurate information on disease incidence, health care workers can ensure that vaccines are widely distributed in order to prevent, control and eliminate vaccine-preventable diseases. By analyzing information obtained on these cases, it will be possible to gain a better understanding of the factors that allow disease transmission despite high immunization rates.

“The occurrence of vaccine-preventable diseases in a community may be a sentinel event that signals the presence of an un- or underimmunized population within the community. Such populations may be small, access health care infrequently, or otherwise be difficult to identify.”[2]

The Section of Vaccine-Preventable and Tuberculosis Disease Elimination is responsible for surveillance of pertussis, diphtheria, tetanus, measles, mumps, poliomyelitis and rubella, as well as *Haemophilus influenzae* type b in children under age 15.

Surveillance of three other vaccine-preventable diseases, hepatitis A, hepatitis B and *H. influenzae* type b in adults, is conducted by the Section of Communicable Disease Control and Veterinary Public Health. Information on the incidence of those diseases can be found in the Communicable Disease 1998 Annual Report to be published in the July-August 1999 issue of the *Missouri Epidemiologist*.

The Office of Surveillance analyzes and disseminates surveillance data and provides consultation for disease intervention activities. Fazle Kahn of the Office of Surveillance coordinates efforts to enhance surveillance of vaccine-preventable diseases in the state. "As vaccine-preventable diseases become less prevalent, the role of surveillance has become more important," according to Kahn. Collecting and reporting complete and accurate information is essential in order to better understand how disease transmission continues.

In 1998, no cases of diphtheria, tetanus or polio were reported in Missouri. There were four cases of mumps, two of whom had been previously immunized. There was one case of measles in a 2-year-old girl who had been previously immunized; two cases of *H. influenzae* type b in children under age 1 who had not been immunized; and two cases of rubella in adult women for whom the immunization history is unknown.

In 1998, 59 cases of pertussis were reported in Missouri, compared to 80 cases in 1997 and 74 in 1996. Forty-seven of the 1998 pertussis cases (80%) were in children less than 1 year of age. Seven cases (12%) were in children between the ages of 1 and 5, and the remaining five cases (8%) were in persons over age 5.

Incomplete immunization coverage is not the only reason that cases of pertussis continue to occur. The Advisory Committee on Immunization Practices (ACIP) recommends an optimum of five doses of pertussis vaccine for children before the age of 7. But even if a person is fully immunized by 7 years of age, immunity eventually wanes. When immunity has waned, adolescents and adults can develop pertussis, which may be undiagnosed but can spread to infants and young children, who are at highest risk of serious illness. However, it is not recommended that persons over age 7 receive routine pertussis vaccination because adverse reactions to the vaccine are thought to be more frequent, and pertussis-associated morbidity and mortality decrease with age.

The Missouri Department of Health is working with both public and private health care providers to ensure that 90 percent of Missouri’s 2-year-olds are appropriately immunized. In addition, Missouri law requires that school-age children be protected from vaccine-preventable diseases. As the department works toward the goal of fully immunizing all children, good surveillance data will greatly enhance its ability to identify individuals and communities in which immunization rates need to be improved.

REFERENCES:

1. Foege WH, Hogan RC, Newton LH. Surveillance projects for selected diseases. Int J Epidemiol 1976;5: 29–37.
2. Wharton M. Disease Reduction Goals. Manual for the Surveillance of Vaccine-Preventable Disease. Atlanta, Ga: National Immunization Program, Centers for Disease Control and Prevention, 1997:1–5.

The following annual reports, normally published in the May-June annual report issue, have been delayed and will be published in the July-August 1999 issue of the *Missouri Epidemiologist*:

- **1998 Outbreaks of Communicable Disease**
- **Communicable Disease 1998 Annual Report**
- **Sexually Transmitted Diseases and HIV/AIDS in Missouri - 1998**

Animal Rabies Surveillance - 1998

F.T. Satalowich, D.V.M., M.S.P.H.
Section of Environmental Health and Communicable Disease Prevention

Rabies activity in Missouri was detected at a slightly higher level, 42 cases, during 1998. See Figure 1. The number of cases increased by 35 percent or 11 cases from the 31 cases in 1997. The number of specimens tested in 1998 was 2,448, with 42 being positive; this is a 1.72 percent positivity rate. In 1997, there were 2,421 specimens tested with 31 positive, for a 1.28 percent positivity rate. This increase of four tenths of a percent in the positivity rate could be the signal for an increase of rabies activity. Historically, an increase in positivity precedes an increase in rabies incidence. From a low of 26 cases of rabies in 1996, the increase to 42 cases in 1998 represents a 61.5 percent increase. Since rabies is endemic in Missouri, cycles in species will fluctuate causing significant total number changes, which may represent an upcoming epidemic. Careful evaluation of all factors and constant vigilance is critical before trends can be predicted and appropriate control measures recommended.

Of the 42 total cases, more than half, 22 cases, were of the South Central skunk variant. This skunk variant spilled over into domestic animals, causing two cases each in the equine and canine species and one case in a feline. This same skunk variant caused one case of fox rabies.

All the skunk variant cases occurred within a four-county tier of the Arkansas border. Only nine of these southern Missouri counties actually reported cases of rabies. One of these counties reported a case of dog rabies; however, no rabies was reported in the wildlife reservoir in that county, possibly due to a lack of surveillance activities.

There were 14 cases of bat rabies scattered throughout the state, the majority involving the Big Brown Bat.

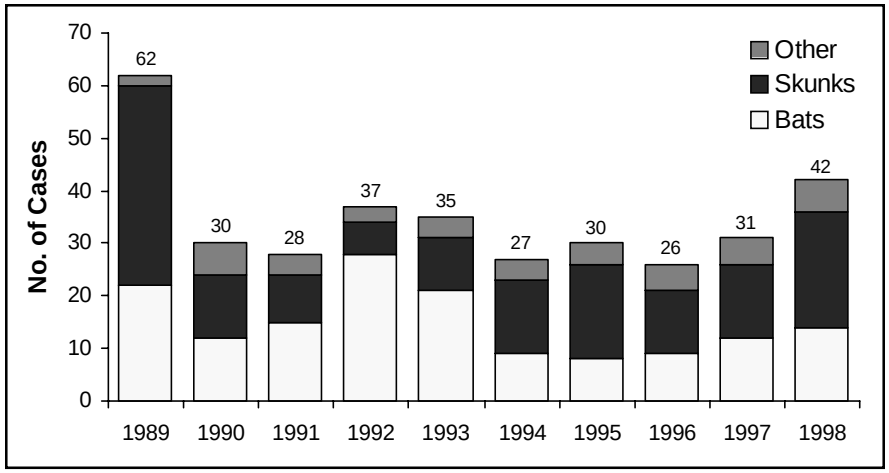


Figure 1. Confirmed animal rabies cases by year and species, Missouri, 1989–98.

This is one case below the 15 cases per year average for the past 11 years. Media coverage of bat rabies has caused undue anxiety in many communities. It should be stressed that there is not an epidemic of bat rabies in Missouri. On the national level, 46 out of 50 states reported rabies in bats. Only Alaska, North Dakota, Vermont and Hawaii (which is rabies free) did not report rabies in bats. Bat rabies incidence in the United States has fluctuated from 600 to 1,000 cases over the past 20 years. The percent of total animal rabies cases attributed to bats was 11.3 percent in 1997, the highest since 1989 when 15 percent of all rabies cases were attributed to bats. The bat strain of rabies was the cause of all four human cases of rabies in 1997 and approximately 80 percent of all human cases that were acquired in the United States and for which the source could be determined since 1980. This fact has contributed to a significant increase in the number of bat specimens (450) submitted for testing in Missouri and most likely in the nation. Although the national 1998 rabies data is not complete, at this point there have not been any cases of human rabies reported. Medical consultation should be sought after possible exposure to a bat.

A positive approach with aggressive public health measures must be followed to control and prevent rabies. Rabies vaccines with three years duration of immunity should continue to be used in domestic animals whenever such a vaccine is available. All dogs, cats and ferrets should be professionally vaccinated. The stringent policy of euthanasia of unvaccinated dogs or cats exposed to laboratory confirmed rabid animals must be continued to prevent additional cases and outbreaks of rabies. Collectively, all of these factors contributed to the low level of rabies incidence in Missouri over the last decade and a half. The ability to maintain low incidence levels may be tested when the raccoon rabies epidemic, now in Ohio and traveling west at 30 miles per year, reaches Missouri's borders.

Kansas State University identified the strain of rabies virus in each specimen that tested positive for rabies this year under a grant program received by that institution. All terrestrial cases of rabies from Missouri in 1998 are from skunk variants except for one canine isolate that could not be typed because of lack of positive staining. All skunk cases are from South Central variant, except for one sample from the Bootheel (New Madrid County) that was the North Central strain. Since there is a pocket of North Central strain in skunks in northern Arkansas, this finding is not surprising. These analyses do prove that the predominant rabies activity occurring in Missouri skunks is the South Central strain variety.

Cardinal Rules of Rabies Control

- All cats, dogs and ferrets should be vaccinated by a professional.
- A program of stray animal control should be instituted.
- Individuals should be instructed to stay away from wild and stray animals.
- **All** animal bites should be medically evaluated.

On the 1997 national picture (latest available data), animal rabies was up from 7,128 in 1996 to a total of 8,509 cases. Wild animals accounted for 7,899 cases or 93 percent of all rabies cases. Raccoons had the most cases with 4,300 (50.5%); skunks with 2,040 cases (24%); bats with 958 cases (11.3%); and foxes with 448 (5.3%). Other wild animals included 55 ground hogs, 53 mongooses, 18 bobcats, seven coyotes, five otters, five beavers, three rabbits, three opossums, two wolf-dog hybrids one squirrel and one muskrat. Domestic animal rabies was seven percent of the total with 610 cases. Of the domestic totals, cats had the most cases with 300 or 49.2 percent, dogs with 126 cases or 20.6 percent; cattle with 122 or 20.0 percent; and horses with 47 or 7.7 percent. Other domestics included 13 sheep/goats, one swine and one ferret.

Animal bites should be reported to your local public health agency or medical authority in Missouri. Evaluation of bites for possible post-exposure rabies treatment is one of the four cardinal rules of rabies control. See sidebar.

No therapy is effective for preventing death due to rabies infection after onset of clinical disease. Therefore, the focus of treatment must be on preventing the virus from reaching the central nervous system. Primary wound management, along with timely and proper administration of rabies immune globulin and vaccine, is essential. Patients should be evaluated for possible rabies post-exposure prophylaxis (PEP). Those indications are:

- Epidemiological evidence for need of PEP
- Patient clinical picture and history
  a. bite or scratch with infectious material penetrating intact skin
  b. contact with saliva/infectious material to wound or mucous membranes
- Reservoir wild animals, including bats, physically present, bite cannot be ruled out and rabies in the wild animal cannot be ruled out by testing.

LATE BREAKERS

☞ **Rubella Alert**—Nebraska and Iowa are experiencing outbreaks of rubella among Hispanic workers in meat processing plants. To date in 1999, Missouri has had two cases of rubella in Hispanic meat processing plant workers in Jasper County. We are asking physicians treating patients with rashes to consider rubella as a possible diagnosis, especially in Hispanic patients. All cases of rubella should be reported to your local public health agency or the Section of Vaccine-Preventable and Tuberculosis Disease Elimination at (800) 699-2313.

☞ **New Immunization Recommendations**

Polio Immunization—The Advisory Committee for Immunization Practices (ACIP) proposes a change in the recommendation for routine childhood polio vaccination beginning in 2000. If the recommendation is accepted by CDC, all children will need to get four doses of inactivated poliovirus vaccine (IPV) at age 2, 4, 6–18 months, and 4–6 years beginning in January 2000. The committee recommends only the IPV to eliminate the occurrence of vaccine-associated paralytic poliomyelitis (VAPP) in the United States.

Varicella Immunization—The ACIP expanded its recommendations to include establishment of child care and school entry requirements by all states, use of the vaccine following exposure and for outbreak control, use of the vaccine for some children infected with the human immunodeficiency virus (HIV), and vaccination of susceptible adults and adolescents at high risk for exposure.

Influenza Immunization—The Food and Drug Administration's Vaccines and Related Biologic Products Advisory Committee (VRBPAC) recommends that the trivalent influenza vaccine prepared for the 1999–2000 season will include A/Beijing/262/95-like (H1N1), A/Sydney/5/97-like (H3N2), and B/Beijing/184/93-like hemagglutinin antigens. For the B/Beijing/184/93-like antigen, U.S. manufacturers will use the antigenically equivalent B/Yamanashi/166/98 virus because of its growth properties and because it is representative of currently circulating B viruses. The ACIP has also released its recommendations on the prevention and control of influenza for the 1999–2000 season.

The full text of the above ACIP recommendations is available through **http://www2.cdc.gov/mmwr/mmwr_rr.html**. If you have questions, please contact the Section of Vaccine-Preventable and Tuberculosis Disease Elimination at (800) 699-2313.

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The Managing Editor is H. Denny Donnell, Jr, MD, MPH, State Epidemiologist. Production Manager is Diane C. Rackers. Questions or comments should be directed to (573) 751-6128 or toll free (800) 392-0272.

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Tick-Borne Disease

(continued from page 19)

Ehrlichiosis infections in Missouri total 154 human cases since 1988, or an average of 14 cases per year. Missouri continues to account for the majority of the ehrlichiosis cases reported nationally, with central Missouri being the epicenter. In 1998, 12 cases of ehrlichiosis were reported in Missouri.

Borreliosis is a serious vector-borne disease in the United States. Borreliosis is a general term which includes both Lyme and Lyme-like illness, as both are thought to be caused by *Borrelia* organisms. Ninety percent of all cases are reported from the northeastern United States. In 1998, there were 12 cases of borreliosis reported in Missouri that met the surveillance case criteria for Lyme disease set by the Centers for Disease Control and Prevention and the Council of State and Territorial Epidemiologists.

The number of cases of tick-borne diseases fell below the five, ten and 15 year averages in 1998. It is possible that all tick-borne diseases are at a natural low ebb, but the decline in the number of reported tick-borne diseases in Missouri may also represent a flaw in the surveillance system.

Why Reporting is Important

Disease surveillance cannot be accomplished by any single group. In essence, it is the compilation of contributions by the patient, the health care provider (both physicians and veterinarians), the hospital and medical community, and the local, state and national public health agencies.

Disease reporting is an important component of health care. Analyzing disease occurrence, the characteristics of the disease and its effect on the population can protect the community. Knowing geographically where specific diseases are occurring and in what populations is important information for prevention. This information also alerts physicians and other providers to new or emerging diseases that may be appearing in their patient populations. Vector-borne diseases recognized in a specific location can be controlled to prevent further disease spread. See Table 1 on page 19 for criteria to be used when reporting tick-borne diseases.

For additional information regarding the symptoms, causative organism and transmission of tick-borne diseases in Missouri, see the 1997 Tick-Borne Disease Summary in the May-June 1998 issue of the *Missouri Epidemiologist.*

Missouri EPIDEMIOLOGIST

Volume 21, Number 4 *July-August 1999*

Missouri WIC: 25 Years of Building Healthier Families Through Good Nutrition

Glenn Studebaker
Bureau of Nutrition Services and WIC

1999 marks the 25th anniversary of Missouri's Special Supplemental Nutrition Program for Women, Infants and Children (WIC). The national program began in 1974 when Congress passed legislation funding WIC through the United States Department of Agriculture (USDA). USDA distributes funds to the states, territories and Native American Nations. They, in turn, distribute the funds to local agencies that deal directly with the participants.

In 1974, 19 clinic sites began operating around the nation. Missouri operated two of these, one in Kirksville and the other in Rolla. Records from that year show that, combined, the two clinics served 934 participants. Now these same two agencies together see almost 2,000 participants a month.

By 1984, WIC services were being offered in every county in Missouri. Today, 120 local agencies operate about 250 clinic sites. Missouri WIC contracts with a variety of organizations for these services, including local public health agencies and private health care providers. Both are able to integrate WIC's services to complement their missions.

Missouri WIC serves pregnant and postpartum women, infants and children under the age of 5, whose income is within 185 percent of the national poverty level and for whom a nutritional risk has been documented

Missouri WIC Income Guidelines
April 1, 1999–March 31, 2000

Family Size	Annual Income
1	$15,244
2	$20,461
3	$25,678
4	$30,895
5	$36,112
6	$41,329
7	$46,546
8	$51,763
Each Additional Family Member	+$5,217

(Pregnant women are counted as two family members)

Many young working families are unaware they qualify for WIC.

Even if a participant meets the qualifications for this program, it is possible that funds will be inadequate to serve everyone who needs the service. Each year WIC receives its appropriation from Congress. That funding then determines at what level WIC will be able to operate during the year. When participants come to the clinic, their nutritional risk is rated on a scale from low risk to high risk. If the program has inadequate funds to serve all risk levels, participants are prioritized starting with the highest first.

Since its beginning, WIC has always been more than a "hand out." The program offers its participants nutrition education and counseling, referrals for health care and other services, breastfeeding support and nutritious supplemental foods. By providing this complete package, the intent of the program becomes obvious: to provide the participant and family with long-term benefits while offering temporary limited assistance.

Nutrition Education and Counseling

Before any participant is qualified for the program, a nutrition assessment is done and the nutritional risks are rated. After that evaluation, the participant spends time with a counselor who helps determine individual ways to improve

(continued on page 2)

Inside this Issue...

(continued from page 1)
nutritional health. In addition to these counseling sessions, each participant is strongly encouraged to attend nutrition education classes conducted conveniently at the time food vouchers are distributed.

Nutrition education and counseling can effectively improve the long-term nutritional health of participants, as well as their family and friends. Good nutrition can positively affect many chronic health conditions and decrease the incidence of chronic disease.

Referrals to Health Care and Other Services

This service offers WIC participants access to holistic programs and services designed to improve quality of life. WIC staff encourage prenatal care for pregnant women, a practice long known to decrease costs and improve health outcomes. Parents are educated about how to get their children immunized. Medicaid and Child Health Insurance Program (CHIP) applications are encouraged when appropriate. WIC affects the overall well-being of its participants in both the short and long terms.

Breastfeeding Support

Another key element of WIC is breastfeeding support. WIC ensures that infants and children receive the appropriate nutrients to get a good start to life, and nothing provides better nutrition to infants than breastfeeding. Babies who are breastfed have a stronger immune system and tend to do better in school than children who are not breastfed.

Nutritious Supplemental Food

This is the aspect of the program that most of the population already associates with WIC. The program is committed to providing foods high in protein, iron, calcium, folate and vitamins A and C. By providing foods high in these dietary components, WIC helps to assure that its participants are getting essential nutrients most often lacking and, therefore, influencing long-term health. These foods are only supplemental and do not represent a complete healthy diet. Therefore, education, counseling, referrals and support are also essential to a participant's long-term healthy outcome. However, if the program ignored the missing foods and nutrients in participants' diets, it would not be as effective in the short term, potentially resulting in increases in medical costs as well as long term complications from lack of these essential dietary components.

In recent years, WIC has added the Farmers' Market Nutrition Program to provide fresh fruits and vegetables to its participants. In this program, WIC participants bring coupons they receive at their local clinic to the Farmers' Market and exchange them for the fresh fruits and vegetables sold there. This program's funding is partially provided by USDA and matched by a state or local funding source. Since this is a new program, it is not yet offered in every county in Missouri. At the present time, this program is available at 15 Farmers' Markets in nine counties.

Studies show that WIC participants have longer pregnancies leading to fewer premature births; give birth to fewer low- and very low-birth-weight babies; experience fewer fetal and infant deaths; seek prenatal care earlier in pregnancy and consume more key nutrients. WIC enables parents to properly feed their children during the critical early years of growth and development, assuring normal growth and reducing levels of anemia. WIC participation also increases immunization rates and improves access to regular health care. In 1998, nearly half of the infants born in the United States, one in five children under the age of 5, and one in every five pregnant women received WIC benefits.

If you are aware of pregnant and postpartum women, or children under the age of 5, who could benefit from participating in WIC, please contact the Bureau of Nutrition Services and WIC at (800) TEL-LINK to find out the location of the nearest clinic. If you would like literature about the WIC program to distribute at your facility, please call (800) 392-8209, or check the Department of Health home page at **www.health.state.mo.us/NutritionServices/WICAndNS**.

Communicable Disease Control 1998 Annual Report

Marion Warwick, M.D., M.P.H.
Section of Communicable Disease Control and Veterinary Public Health

For persons not familiar with the public health system, it may be helpful to summarize the general categories of communicable diseases in order to put this summary report in context. Some communicable diseases reportable in Missouri are served by state programs which receive federal funding. These diseases include tuberculosis and most vaccine-preventable diseases[1,2], as well as sexually transmitted diseases, including HIV/AIDS (see pages 6–13 and 28–35 of this issue for annual reports on these diseases). There are currently 38 communicable diseases reportable in Missouri for which state programs do not receive federal funding. Some zoonotic diseases within this category have been discussed elsewhere.[3,4,5] The influenza summary for the 1998–99 season can be found on pages 14–15 of this issue. This communicable disease control annual report for 1998 covers trends for the other 24 reportable communicable diseases. Of these diseases, 10 were of low incidence and will not be discussed further (botulism, cholera, invasive group A streptococcus, hemolytic uremic syndrome, typhoid, Kawasaki syndrome, Legionella, malaria, Reye's syndrome and toxic shock syndrome). The remaining 14 diseases will be discussed in three general categories: enteric diseases (2,293 case reports), hepatitis (890 case reports) and meningitis (80 case reports).

Reporting Sources

The reporting sources for communicable disease data include:

- Hospital infection control practitioners - 976 (29.9%)
- Other laboratories - 954 (29.2%)
- Physicians - 323 (9.9%)
- Hospital laboratories - 278 (8.5%)
- Public health clinics - 71 (2.2%)

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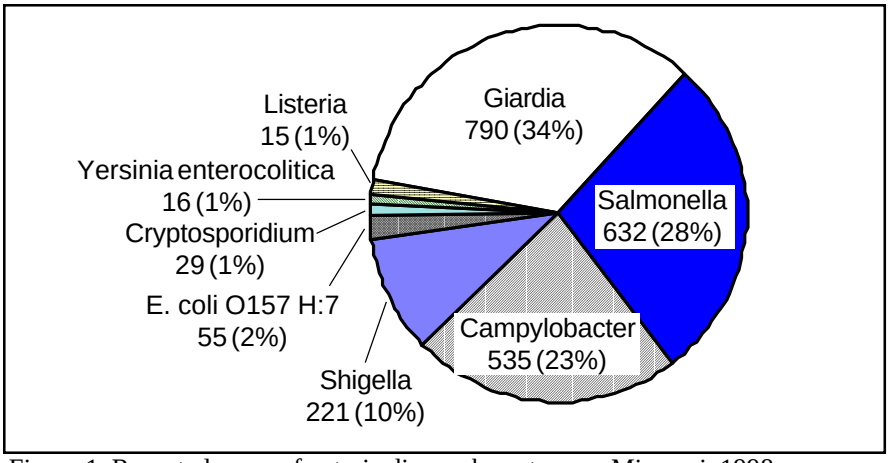


Figure 1. Reported cases of enteric disease by category, Missouri, 1998.

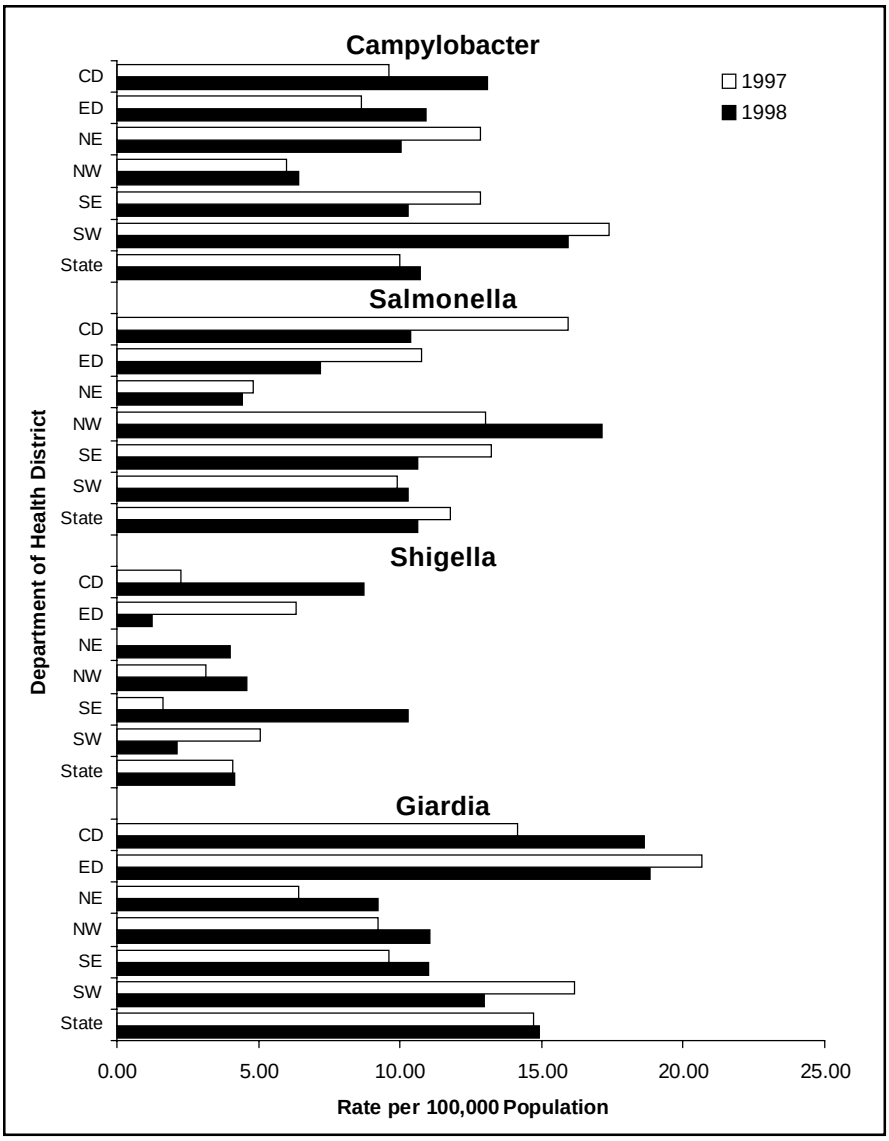


Figure 2. Reported cases of enteric disease by Department of Health district, Missouri, 1997 and 1998.

(continued from page 3)

- Outpatient clinics - 15 (0.5%)
- School nurses - 4 (0.1%)
- Other sources - 642 (19.7%)

Enteric Diseases

Among the diseases falling into the enteric category, four accounted for 95 percent of the enteric diseases reported in 1998: *Giardia* 790 (34%), *Salmonella* 632 (28%), *Campylobacter* 535 (23%), and *Shigella* 221 (10%). See Figure 1 on page 3. Overall, the incidence of these four diseases increased by 0.6 percent over 1997 (2,164 versus 2,178 cases). The increase in *Giardia*, *Campylobacter* and *Shigella* was almost balanced by a 11.3 percent decrease in the number of *Salmonella* cases reported. See Figure 2 on page 3.

Every health district reported an increase in at least one major enteric pathogen, except the Northwestern district, where the rates of all four diseases were decreased from last year. Rates of enteric diseases tended to peak in two age groups: age <7 years and the range 21–45 years. This pattern is likely to reflect transmission within families that have a member in the toddler years. See Figure 3.

The reports of enteric disease followed a seasonal pattern, with higher rates during the summer months (*Giardia*, *Campylobacter* and *Salmonella*) and the Thanksgiving to New Year season (*Shigella* and *Salmonella*). See Figure 4. Statewide, the rates of all four diseases were consistent with trends of previous years:

- *Giardia* increased 2.1 percent (790 cases in 1998, up from the 5-year median of 774 cases) ,
- Salmonella increased 11.3 percent (632 cases in 1998, up from the 5-year median of 568 cases),
- *Campylobacter* decreased 11.0 percent (535 cases in 1998, down from the 5-year median of 601 cases), and
- *Shigella* decreased 66.2 percent (221 cases in 1998, down from the 5-year median of 221 cases that reflects a large increase of 1,138 cases in 1995).

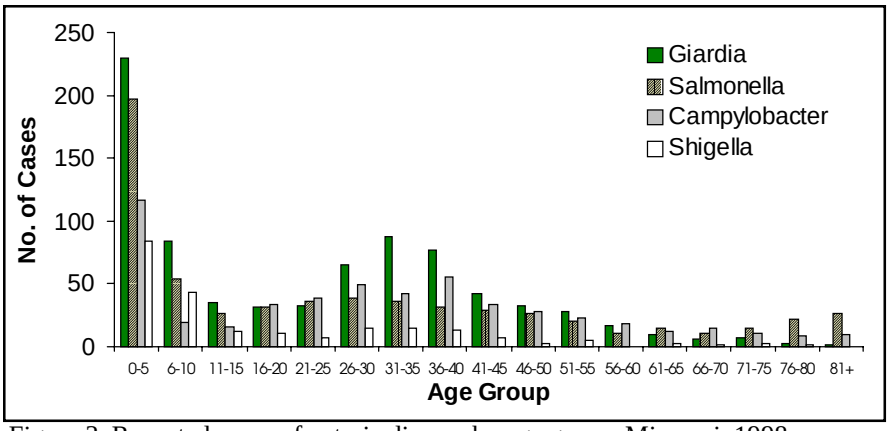


Figure 3. Reported cases of enteric disease by age group, Missouri, 1998.

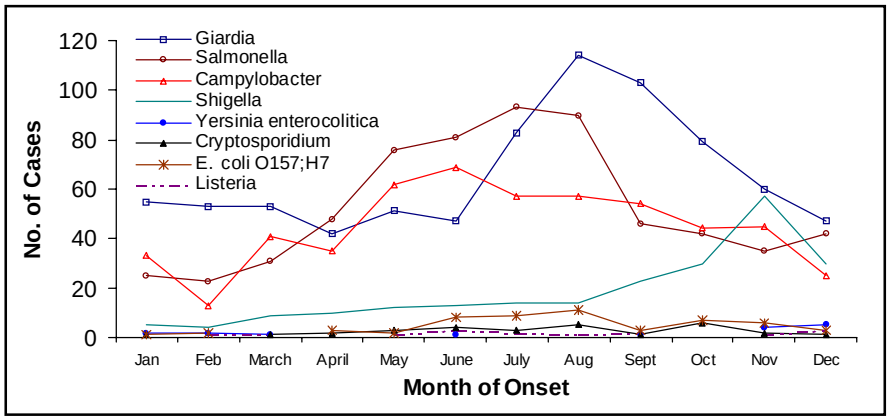


Figure 4. Reported cases of enteric disease by month of onset, Missouri, 1998

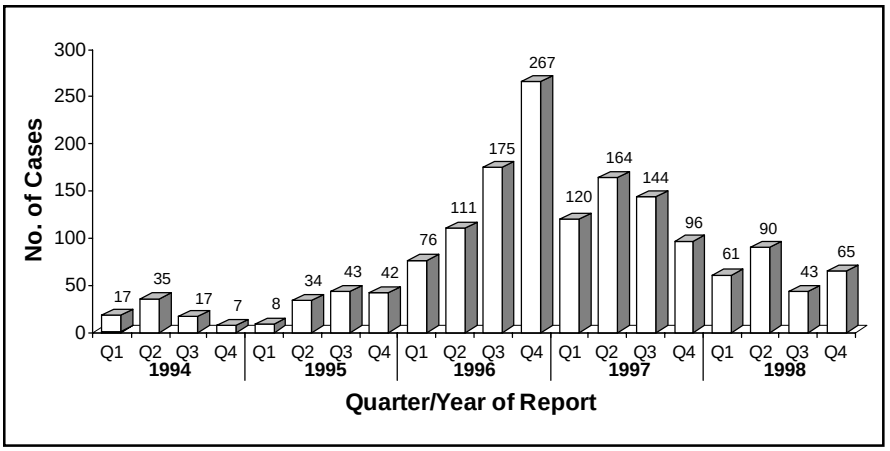
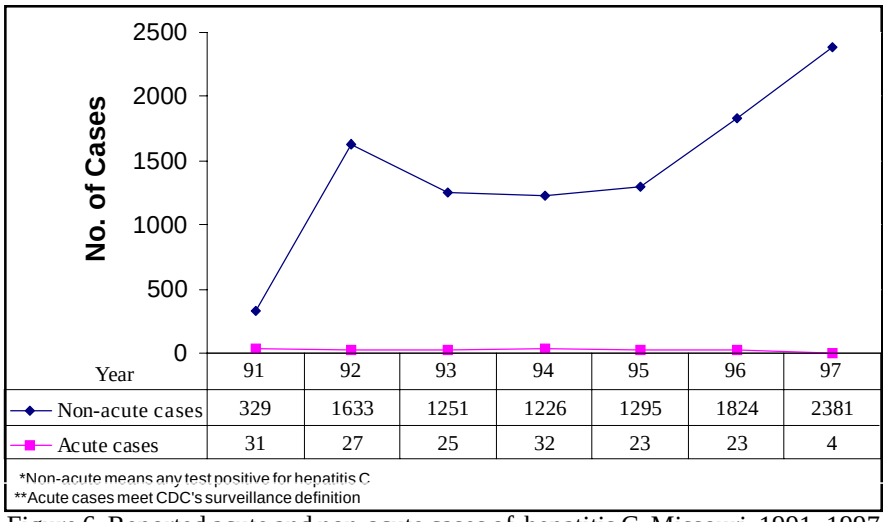


Figure 5. Reported cases of hepatitis A by quarter/year of report, Southwestern Health District, Missouri, 1994–1998.

Hepatitis

Hepatitis A cases in 1998 (637) decreased 44.7 percent statewide from 1997 (1,151 cases) and 52.4 percent from the 5-year median (1,338 cases). Recently, the highest rates of hepatitis A have been reported in the southwestern portion of the state. See Figure 5. For counties which have a rate of hepatitis A greater than 50 per 100,000 population, the federal government provides pediatric vaccine through the Vaccines For Children (VFC) program. Nine counties, all in the Southwestern health district, qualified to receive this vaccine and all have initiated intensive vaccination efforts.

In 1998, vaccination campaigns in the pediatric age group were expanded to include 16 other counties that volunteered to distribute a total of 90,000 doses of the three-dose vaccine (donated to the state by the SmithKline Beecham pharmaceutical company). Vaccine campaigns targeted to adults were administered in 11 counties throughout the state, through special state funding targeted for hepatitis A. Some counties offered hepatitis A vaccine at cost to food handlers. In 1998, every health district reported a decrease in the number of hepatitis A cases from 1997.



Year	91	92	93	94	95	96	97
Non-acute cases	329	1633	1251	1226	1295	1824	2381
Acute cases	31	27	25	32	23	23	4

*Non-acute means any test positive for hepatitis C
**Acute cases meet CDC's surveillance definition

Figure 6. Reported acute and non-acute cases of hepatitis C, Missouri, 1991–1997.

The number of hepatitis B cases also decreased statewide, from 360 cases in 1997 to 252 cases in 1998 (30%), reflecting a 42.3 percent decrease from the 5-year median of 437 cases. In 1998, the state provided additional vaccine to local public health agencies so that patients through age 18 years meeting requirements for the VFC Program could obtain hepatitis B immunizations through their local public health agencies.

Reports of hepatitis C increased from 6 cases in 1997 to 14 cases in 1998. These cases are acute cases of hepatitis C that meet the case definition from the Centers for Disease Control and Prevention (CDC).[6] The Department of Health also tracks all reports of persons who have tested positive at any time for hepatitis C. These cases are more likely to be chronic, or non-acute cases. See Figure 6. If the estimated national prevalence rate of infection for hepatitis C of 1.8 percent[7] were true in Missouri, we would expect approximately 94,000 cases of hepatitis C to have been reported. However, case reports tallied through October 1998 number just over 12,000 case reports. It is very likely that a large number of cases have either not been reported or have not been diagnosed. Persons in high risk groups for hepatitis C[7] should be screened so they can take secondary prevention measures such as seeking vaccination for hepatitis A and B, abstaining from alcohol (and other drugs metabolized by the liver such as Tylenol), and discussing treatment options with their physician. See sidebar for high risk groups.

High Risk Groups for Hepatitis C[7]

The following individuals are considered at high risk for hepatitis C and should be tested:

- Persons who were treated for clotting problems with a blood product made before 1987, when more advanced methods for manufacturing the products were developed.
- Persons who were notified that they received blood from a donor who later tested positive for hepatitis C.
- Persons who received a blood transfusion or solid organ transplant before July 1992, when better testing of blood donors became available.
- Long-term hemodialysis patients.
- Persons who ever injected illegal drugs, including those who injected once or a few times many years ago.
- Persons who have signs or symptoms of liver disease (e.g., abnormal liver enzyme tests).
- Health-care workers after exposures (e.g., needle sticks or splashes to the eye) to HCV-positive blood on the job.
- Children born to HCV-positive women.

Meningitis

Reports of meningitis and other forms of meningococcal disease were down from both 1997 and the 5-year median. Statewide, 25 meningitis cases were reported, down 41.9 percent from 43 cases, which was both the number of cases in 1997 and the 5-year median. Other invasive meningococcal disease also decreased, down from 63 cases reported in 1997 to 55 cases in 1998.

There was a large increase in aseptic meningitis, up 220 percent from 1997 (99 cases to 317 cases). The largest number of cases was reported from the Eastern

(continued on page 25)

Sexually Transmitted Diseases in Missouri: 1998

Robert Hamm, M.D., M.P.H.
Office of Epidemiology

Gonorrhea

During 1998, 9,463 cases of gonorrhea were reported in Missouri; the corresponding rate* was 175.2 cases per 100,000 population. Because of underdiagnosis and underreporting, the actual number of persons infected with *Neisseria gonorrhoeae* (and with the other sexually transmitted pathogens discussed below) is undoubtedly much higher than what is reported here.

The preceding year, 1997, 7,656 cases of gonorrhea were reported in the state, with 324,901 cases reported nationwide (most recent U.S. data). The rate of reported gonorrhea cases in Missouri (141.7) was approximately 1.2 times the U.S. rate (122.5). Missouri ranked 13th among the fifty states in rates of reported gonorrhea cases in 1997.

Of total gonorrhea cases reported in Missouri in 1998, 48.0 percent were in males and 52.0 percent were in females. Among African Americans, a higher proportion of cases were reported in males (56.2%) than in females (43.8%). Among whites, a much higher proportion of cases were reported in females (77.5%) than in males (22.5%).

* All rates (except those for congenital syphilis cases) are per 100,000 population, using 1997 population estimates.

Table 1. Reported Gonorrhea Cases and Rates by Geographic Area, Missouri, 1998

	Cases	%	Rate*
Missouri			
Whites	1,017	10.7%	21.6
Blacks	6,558	69.3%	1,081.1
Other/Unknown	1,888	20.0%	--
Total Cases	**9,463**	**100.0%**	**175.2**
St. Louis City			
Whites	98	2.7%	61.2
Blacks	2,851	78.1%	1,611.7
Other/Unknown	703	19.2%	--
Total Cases	**3,652**	**100.0%**	**1,068.2**
St. Louis County			
Whites	95	5.4%	11.6
Blacks	1,271	72.1%	773.0
Other/Unknown	398	22.6%	--
Total Cases	**1,764**	**100.0%**	**175.8**
Kansas City			
Whites	220	9.3%	73.6
Blacks	1,795	75.6%	1,354.8
Other/Unknown	360	15.2%	--
Total Cases	**2,375**	**100.0%**	**530.4**
Outstate			
Whites	604	36.1%	17.6
Blacks	641	38.3%	482.7
Other/Unknown	427	25.5%	--
Total Cases	**1,672**	**100.0%**	**46.3**

*Per 100,000 population, based on 1997 population estimates.

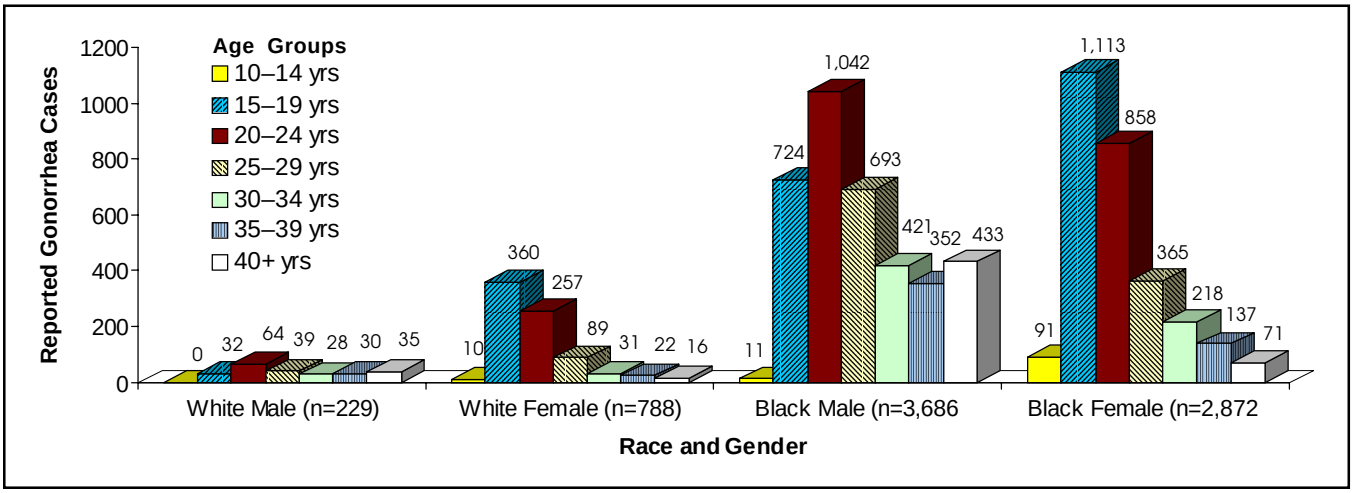


Figure 1. Reported gonorrhea cases by race, gender and age group, Missouri, 1998.

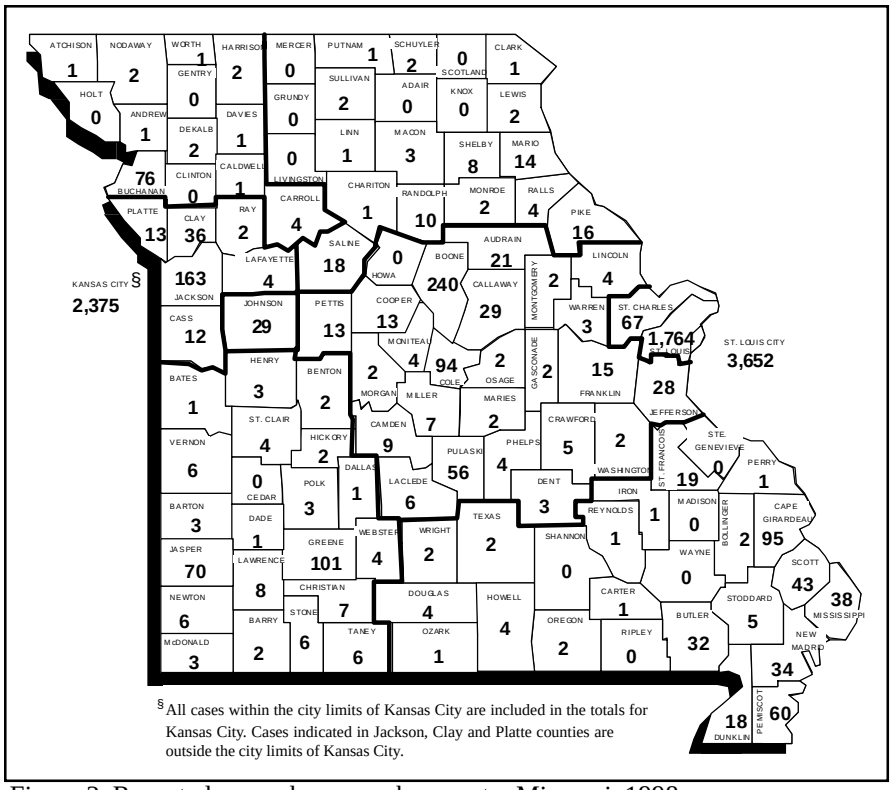


Figure 2. Reported gonorrhea cases by county, Missouri, 1998.

Of the 9,463 cases of gonorrhea reported in 1998, 6,558 (69.3%) were known to have occurred in African Americans, 1,017 (10.7%) in whites, 14 (0.1%) in Asians, and 6 (0.1%) in Native Americans. In addition, 43 (0.5%) cases were classified as Other Race. For 1,825 (19.3%) cases, race was not indicated. Table 1 shows the numbers and percentages of reported gonorrhea cases in whites and African Americans for Missouri, St. Louis City and County, Kansas City, and Outstate Missouri.

Among reported gonorrhea cases, African Americans continue to be very disproportionately represented. In 1998, over six times as many cases were reported in African Americans compared to whites. The rate of reported cases in African Americans (1,081.1) was about fifty times the rate in whites (21.6). Table 1 shows the rates of reported gonorrhea cases in whites and African Americans for Missouri, St. Louis City and County, Kansas City, and Outstate Missouri.

A substantial proportion of reported gonorrhea cases in females are in teenagers. In 1998, persons less than 20 years of age made up 42.2 percent of African American female cases, 47.0 percent of white female cases, 20.0 percent of African American male cases, and 14.0 percent of white male cases. Figure 1 shows the distribution of cases by age group for white males and females, and African American males and females.

In 1998, of the 9,463 gonorrhea cases reported, 3,652 (38.6%) were from St. Louis City, 2,375 (25.1%) from Kansas City, 1,764 (18.6%) from St. Louis County, and 1,672 (17.7%) from the remainder of the state (Outstate Missouri). Cases were reported from 100 of the state's 114 counties. Figure 2 shows the number of gonorrhea cases reported from each county in 1998.

The highest rate of reported gonorrhea cases in 1998 was in St. Louis City (1,068.2), followed by Kansas City (530.4), St. Louis County (175.8), and Outstate Missouri (46.3).

The annual number of reported cases of gonorrhea in Missouri had decreased each year from 1989 to 1997. In 1998, the 9,463 gonorrhea cases reported represented a 23.6 percent increase from the 7,656 cases reported in 1997. Figure 3 shows the trends in reported gonorrhea cases from 1984–1998 for Missouri, St. Louis City and County, Kansas City, and Outstate Missouri.

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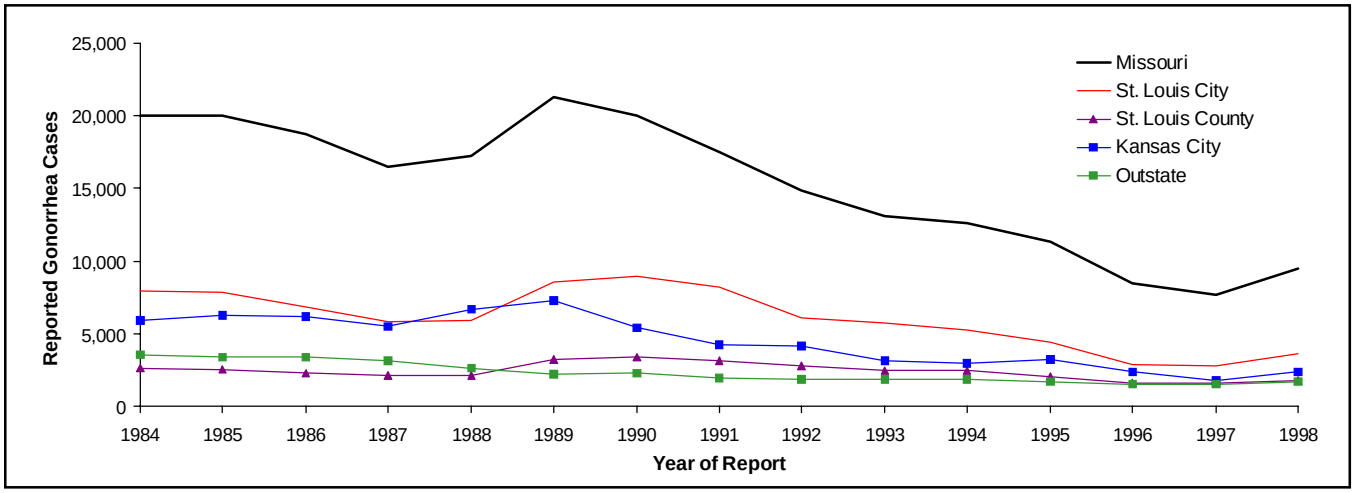

Figure 3. Reported gonorrhea cases by geographic area and year of report, Missouri, 1998.

Table 2. Reported P&S Syphilis Cases and Rates by Geographic Area, Missouri, 1998

	Cases	%	Rate*
Missouri			
Whites	11	10.1%	0.2
Blacks	90	82.6%	14.8
Other/Unknown	8	7.3%	--
Total Cases	**109**	**100.0%**	**2.0**
St. Louis City			
Whites	2	3.4%	1.2
Blacks	50	86.2%	28.3
Other/Unknown	6	10.3%	--
Total Cases	**58**	**100.0%**	**17.0**
St. Louis County			
Whites	0	0.0%	0.0
Blacks	13	86.7%	7.9
Other/Unknown	2	13.3%	--
Total Cases	**15**	**100.0%**	**1.5**
Kansas City			
Whites	0	0.0%	0.0
Blacks	6	100.0%	4.5
Other/Unknown	0	0.0%	--
Total Cases	**6**	**100.0%**	**1.3**
Outstate			
Whites	9	30.0%	0.3
Blacks	21	70.0%	15.8
Other/Unknown	0	0.0%	--
Total Cases	**30**	**100.0%**	**0.8**

*Per 100,000 population, based on 1997 population estimates.

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From 1997 to 1998, reported cases of gonorrhea in Kansas City increased by 35.5 percent (from 1,753 to 2,375 cases); St. Louis City cases increased by 30.1 percent (from 2,806 to 3,652 cases); Outstate cases increased by 11.9 percent (from 1,494 to 1,672 cases); and St. Louis County cases increased by 10.0 percent (from 1,603 to 1,764 cases).

Comment:

Large numbers of Missourians are infected with *Neisseria gonorrhoeae* each year, and African Americans continue to be very disproportionately affected. For all racial groups, the largest numbers of cases are reported from persons in their late teens and early twenties; among females, the 15–19 year old age group has the most reported cases. In 1998, the largest numbers of gonorrhea cases, and the highest rates, were reported from St. Louis City, followed by Kansas City, St. Louis County, and Outstate Missouri. Cases were reported from most Missouri counties. The annual number of reported gonorrhea cases in Missouri had decreased each year from 1989 to 1997; however, in 1998, a noticeable increase in reported cases occurred. The largest increase was seen in Kansas City, followed by St. Louis City; smaller increases were seen in St. Louis County and in Outstate Missouri.

Gonorrhea is a major cause of pelvic inflammatory disease, infertility, ectopic pregnancy, and chronic pelvic pain. Along with other inflammatory sexually transmitted diseases (STDs), it increases the transmissibility of HIV. Increases in reported gonorrhea cases, seen in all areas of Missouri during 1998, are a cause for concern. The largest burden of infection is in African Americans, among teenagers and young adults, and in urban areas. However, the infection, although on a smaller scale, is also occurring in other groups of persons and in non-urban areas.

Primary and Secondary (P&S) Syphilis

During 1998, 109 cases of P&S syphilis were reported in Missouri; the corresponding rate was 2.0. (An additional 165 cases of early latent [duration of less than one year] syphilis were reported during 1998.)

During the preceding year, 1997, 118 cases of P&S syphilis were reported in Missouri, compared to 8,550 cases reported nationwide (most recent U.S. data). The rate of P&S syphilis cases reported in Missouri (2.2) was approximately two-thirds the U.S. rate (3.2). Missouri ranked 19th among the fifty states in rates of reported P&S syphilis cases in 1997.

Of the 109 P&S syphilis cases reported in 1998, 54.1 percent were in males and 45.9 percent were in females. Ninety cases (82.6%) were in African Americans, and 11 (10.1%) were in whites. For 8 (7.3%) cases, race was not indicated. Table 2 shows the numbers and percentages of reported P&S syphilis cases in whites and African Americans for Missouri, St. Louis City and County, Kansas City, and Outstate Missouri.

African Americans are disproportionately represented among reported P&S syphilis cases. The rate for cases reported in 1998 in African Americans (14.8) was 75 times the rate for cases in whites (0.2). Table 2 shows the rates of reported P&S syphilis cases in whites and African Americans for Missouri, St.

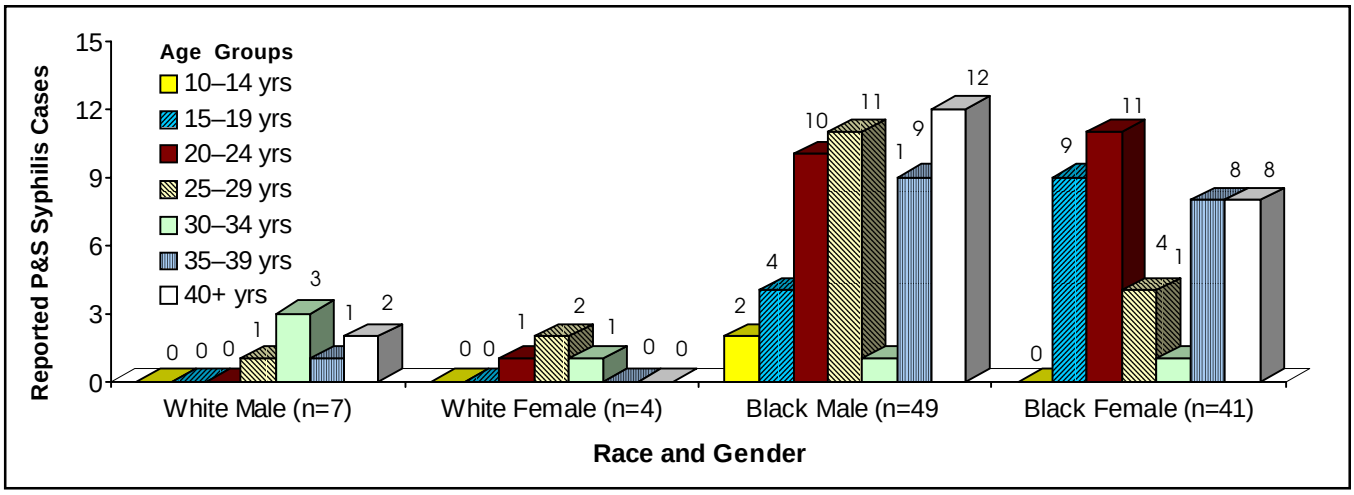

Figure 4. Reported P&S syphilis cases by race, gender and age group, Missouri, 1998.

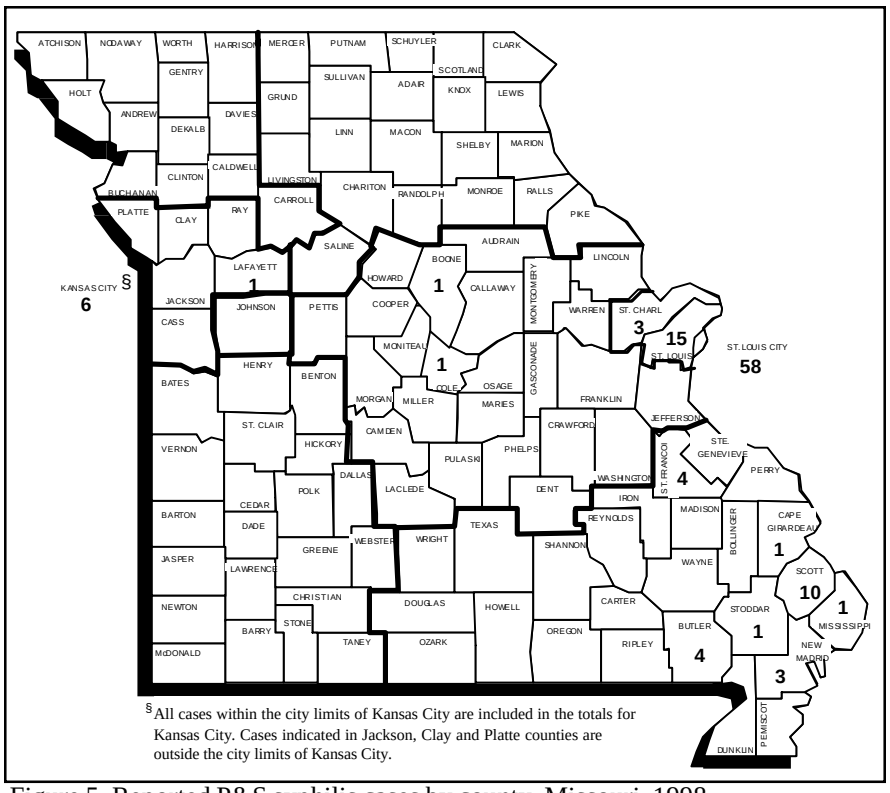

Figure 5. Reported P&S syphilis cases by county, Missouri, 1998.

Louis City and County, Kansas City, and Outstate Missouri.

The average age at time of diagnosis is higher for reported cases of P&S syphilis as compared to reported cases of chlamydia or gonorrhea. For reported cases of P&S syphilis in males during 1998, the largest proportion of cases (25.4%) were in the 40+ age group. For females, the largest proportion of cases (26.0%) were in the 20–24 year age group; however, 40.0 percent of all female cases were in women 30 years of age and older. Figure 4 shows the distribution of cases by age group for white males and females, and African American males and females.

Of the 109 P&S syphilis cases reported in 1998, 58 (53.2%) were from St. Louis City, followed by 30 (27.5%) from Outstate Missouri, 15 (13.8%) from St. Louis County, and 6 (5.5%) from Kansas City. Cases were reported from only 14 of the state's 114 counties. Figure 5 shows the number of P&S syphilis cases reported from each county in 1998.

The highest rate of reported P&S syphilis cases in 1998 was in St. Louis City (17.0), followed by St. Louis County (1.5), Kansas City (1.3), and Outstate Missouri (0.8).

Since 1993, when a syphilis outbreak in the St. Louis area was at its height, the number of annually reported cases of P&S syphilis in Missouri has been decreasing, although the rate of decrease has slowed during the past two years. The 109 cases reported in 1998 represented a 7.6 percent decline from the 118 cases reported in 1997. Figure 6 on page 10 shows the trends in reported P&S syphilis cases from 1984–1998 for Missouri, St. Louis City and County, Kansas City, and Outstate Missouri.

From 1997 to 1998, reported cases of P&S syphilis increased by 30.4 percent (from 23 to 30 cases) in the Outstate area; most were associated with an outbreak in the Bootheel area. Reported cases from St. Louis County decreased by 48.3 percent (from 29 to 15 cases); reported St. Louis City cases decreased by 9.4 percent (from 64 to 58 cases). Six P&S syphilis cases were reported from Kansas City during 1998, compared with two the preceding year.

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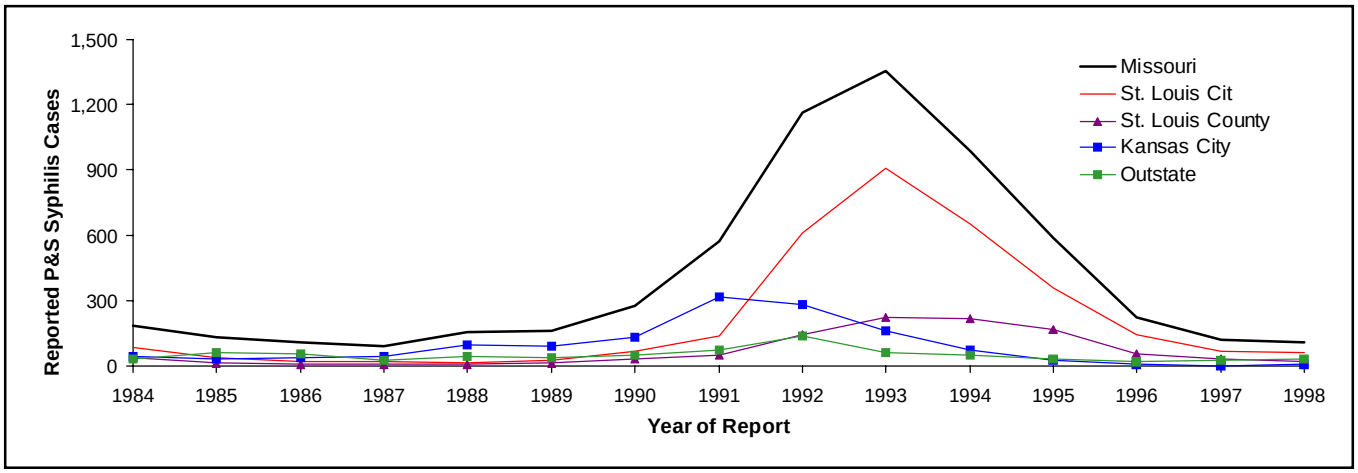

Figure 6. Reported P&S syphilis cases bygeographic area and year of report, Missouri, 1998.

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Comment:

The 109 cases of P&S syphilis reported in Missouri in 1998 were the smallest number of cases reported since the late 1980s. African Americans continue to be very disproportionately affected by syphilis, with few P&S syphilis cases being reported in whites. The average age at time of diagnosis is higher for reported cases of P&S syphilis as compared to reported cases of chlamydia or gonorrhea, and a noticeable number of cases are seen in persons ≥35 years of age.

In 1998, the largest numbers of P&S syphilis cases were reported from St. Louis City, followed by the Outstate area (most Outstate cases were associated with the Bootheel outbreak). The highest rates of reported P&S syphilis cases were from St. Louis City. The relatively limited geographic distribution of the disease in Missouri is indicated by the fact that only 14 of the state's 114 counties reported P&S syphilis cases in 1998.

Since 1993, when a syphilis outbreak in the St. Louis area was at its height, the number of annually reported cases of P&S syphilis in Missouri has been decreasing. However, the rate of decrease has slowed during the past two years, and the decrease from 1997 to 1998 was the smallest since 1993.

The number of reported cases of P&S syphilis in Missouri is small in comparison to other STDs such as gonorrhea and chlamydia. However, severe disease can result from untreated syphilis infection, and the presence of ulcerative syphilis lesions increases the transmissibility of HIV. In addition, significant resources must be devoted to control of even a relatively few number of cases. For all of these reasons, the control and eventual elimination of syphilis remains an important priority. The noticeable slowing of the rate of decline in reported P&S syphilis cases over the past two years, along with the increase in congenital syphilis cases in 1998 (see below), are causes for concern. The potential remains for the recurrence of significant outbreaks of syphilis in the state.

The Section of STD/HIV/AIDS Prevention and Care Services has received a five-year Syphilis Elimination Grant focusing on eliminating syphilis in St. Louis City by 2005. Strategies being planned as part of this effort include (but are not limited to): enhanced syphilis screening in the St. Louis criminal justice system, and increased screenings at homeless shelters, and at street and community site locations. For more information on the grant, contact Mary Hayes at (800) 359-6259 or (573) 751-6139.

Congenital Syphilis

Congenital syphilis is the result of transmission of *Treponema pallidum* from an infected mother to her infant during pregnancy or at the time of delivery. During the past five years, 162 cases have been reported in infants born to women who were Missouri residents. During 1998, 20 cases were reported in the state; the corresponding rate** was 27.0.

During the preceding year, 1997, 12 cases of congenital syphilis were reported in Missouri, compared to 1,049 cases reported nationwide (most recent U.S. data). The rate of congenital syphilis cases in Missouri (16.2) in 1997 was lower than the nationwide rate (26.9).

African American infants are disproportionately represented among reported congenital syphilis cases. Of the 20 cases reported in 1998, 16 (80.0%) were in African American infants.

Of the 20 congenital syphilis cases reported in 1998, 15 (75.0%) were known to be born to single (never married) mothers. Ten (50.0%) of the 20 congenital syphilis cases were known to be born to mothers who received no prenatal care. An additional four (20.0%) cases were born to mothers who had only one or two prenatal care visits.

Of the 20 congenital syphilis cases reported in 1998, 11 (55.0%) were from St. Louis County, 7 (35.0%) were from St. Louis City, and 2 (10.0%) were from Outstate Missouri (both from the Bootheel area). No cases were reported from Kansas City.

**All rates for congenital syphilis cases are per 100,000 live births.

In recent years, reported cases of congenital syphilis in Missouri peaked at 97 cases in 1993 (corresponding to the height of the syphilis outbreak in the St. Louis area), and then markedly declined to 12 reported cases in both 1996 and 1997. The 20 cases reported in 1998 represented a 66.7 percent increase from the 12 cases reported the previous year.

Comment:
In 1998, 20 cases of congenital syphilis were reported in Missouri. Numbers of reported cases had shown substantial declines each year from 1994 through 1996. In 1997, reported cases remained at the same level as the preceding year, but in 1998, the number reported increased noticeably. In 1998, most cases were from the St. Louis area, with the remainder from the Bootheel area. More cases were reported from St. Louis County (11) than from St. Louis City (7), but the case rate was highest in St. Louis City (122.3, vs 85.0 in St. Louis County).

African Americans were disproportionately represented among reported congenital syphilis cases. Most mothers of the congenital syphilis cases were single, and at least two-thirds had ≤2 prenatal visits.

A significant risk factor associated with many of the congenital syphilis cases was lack of, or inadequate, prenatal care by the mother. Adequate prenatal care, which includes syphilis testing, is vital to detecting and treating infection in pregnant women so that congenital syphilis in the infant can be prevented. It is also important to remember that by minimizing the number of new syphilis infections which occur in young adults, one can decrease the risk of congenital syphilis in the community.

Chlamydia

During 1998, 12,655 cases of chlamydia were reported in Missouri; the corresponding rate was 234.3. During the preceding year, 1997, 12,247 cases of chlamydia were reported in Missouri, with 526,653 cases reported nationwide (most recent U.S. data). The rate of reported chlamydia cases in Missouri (226.7) was slightly higher than the U.S. rate (207.0). Missouri ranked 13th among the fifty states in rates of reported chlamydia cases in 1997.

Table 3. Reported Chlamydia Cases and Rates by Geographic Area, Missouri, 1998

	Cases	%	Rate*
Missouri			
Whites	3,198	25.3%	67.8
Blacks	4,895	38.7%	807.0
Other/Unknown	4,562	36.0%	--
Total Cases	**12,655**	**100.0%**	**234.3**
St. Louis City			
Whites	133	4.6%	83.1
Blacks	1,684	57.8%	952.0
Other/Unknown	1,094	37.6%	--
Total Cases	**2,911**	**100.0%**	**851.5**
St. Louis County			
Whites	250	10.8%	30.5
Blacks	1,163	50.0%	707.4
Other/Unknown	911	39.2%	--
Total Cases	**2,324**	**100.0%**	**231.6**
Kansas City			
Whites	332	12.7%	111.0
Blacks	1,294	49.4%	976.6
Other/Unknown	992	37.9%	--
Total Cases	**2,618**	**100.0%**	**584.7**
Outstate			
Whites	2,483	51.7%	72.2
Blacks	754	15.7%	567.8
Other/Unknown	1,565	32.6%	--
Total Cases	**4,802**	**100.0%**	**133.1**

*Per 100,000 population, based on 1997 population estimates.

Of total chlamydia cases reported in 1998, the vast majority were in females (87.4%). This reflects the selective screening of females for chlamydia undertaken by the Missouri Infertility Prevention Project (MIPP). If similar widespread screening of males were also undertaken, it is expected that the number of diagnosed and reported cases in males would be much higher than is currently seen.

Of the 12,655 cases of chlamydia reported in 1998, 4,895 (38.7%) cases were known to have occurred in African Americans, 3,198 (25.3%) in whites, 33 (0.3%) in Asians, and 15 (0.1%) in Native Americans; in addition, 28 (0.2%) cases were classified as Other Race. For 4,486 (35.4%) cases, race was not indicated. Table 3 shows the numbers and percentages of reported chlamydia cases in whites and African Americans for Missouri, St. Louis City and County, Kansas City, and Outstate Missouri.

African Americans are disproportionately represented among reported chlamydia cases. The rate for cases reported in 1998 in African Americans (807.0) was approximately 12 times the rate for cases in whites (67.8). Table 3

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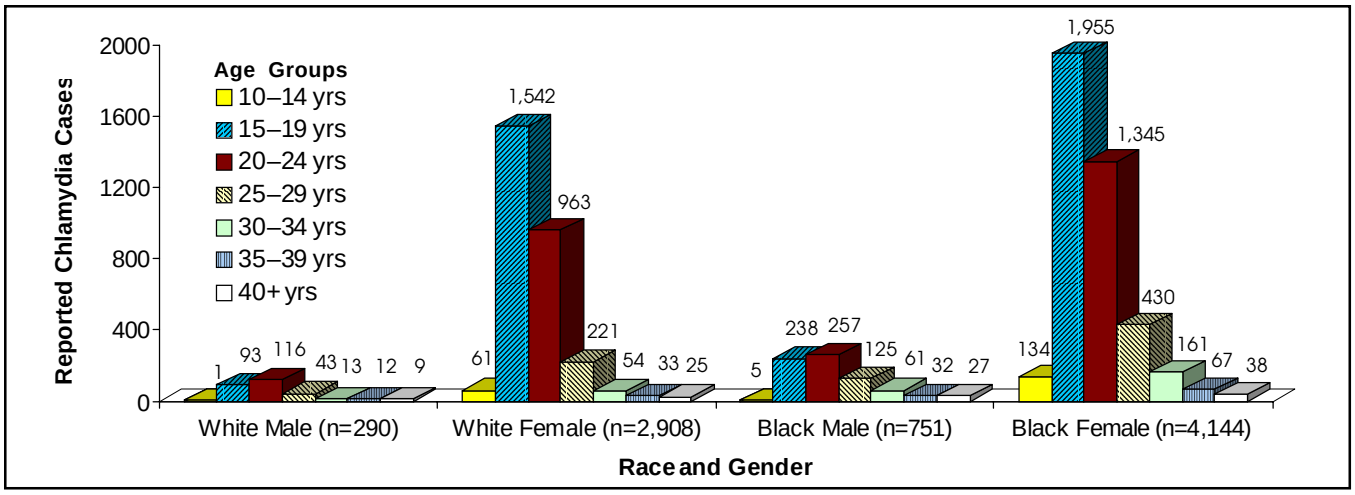

Figure 7. Reported chlamydia cases by race, gender and age group, Missouri, 1998.

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shows the rates of reported chlamydia cases in whites and African Americans for Missouri, St. Louis City and County, Kansas City, and Outstate Missouri.

In 1998, slightly over half of reported chlamydia cases in females were in teenagers. Persons less than 20 years of age made up 50.5 percent of African American female cases, 55.2 percent of white female cases, 32.6 percent of African American male cases, and 33.1 percent of white male cases. Figure 7 shows the distribution of cases by age group for white males and females, and African American males and females.

Of the 12,655 chlamydia cases reported in 1998, the largest number, 4,802 (37.9%) were from Outstate Missouri, followed by 2,911 (23.0%) from St. Louis City, 2,618 (20.7%) from Kansas City, and 2,324 (18.4%) from St. Louis County. Only one county in Missouri did not report at least one chlamydia case in 1998. Figure 8 shows the number of chlamydia cases reported from each county in 1998.

The highest rate of reported cases in 1998 was in St. Louis City (851.5), followed by Kansas City (584.7), St. Louis County (231.6), and Outstate Missouri (133.1).

In 1998, the 12,655 reported cases of chlamydia represented a 3.3 percent increase from the 12,247 cases reported in 1997. Figure 9 shows the trends in

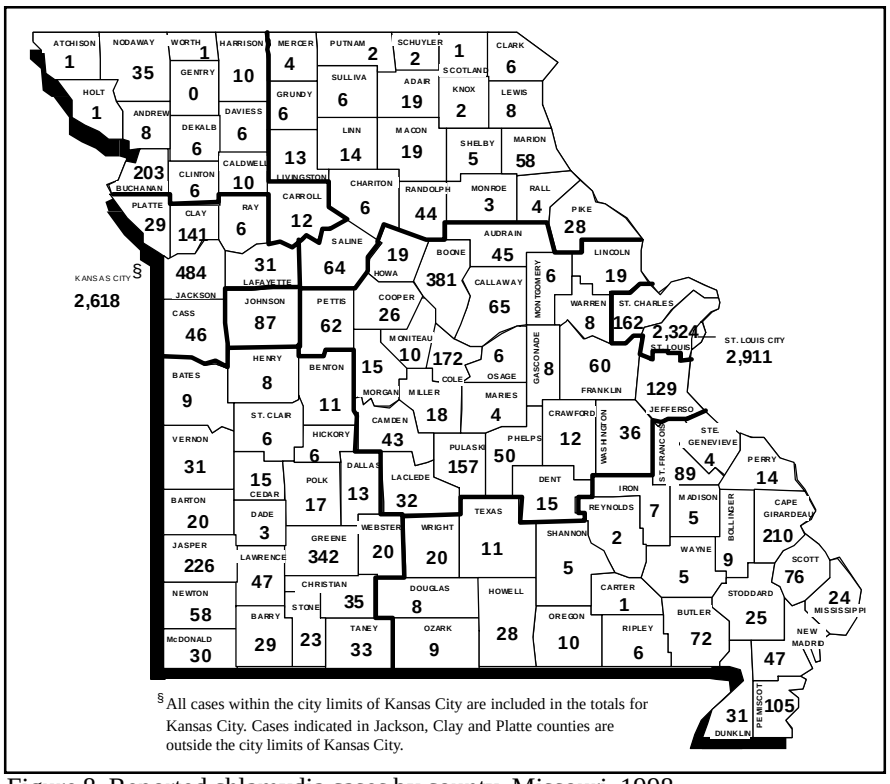

Figure 8. Reported chlamydia cases by county, Missouri, 1998.

reported chlamydia cases from 1984–1998 for Missouri, St. Louis City and County, Kansas City, and Outstate Missouri.

From 1997 to 1998, reported cases of chlamydia in St. Louis City increased by 9.8 percent (from 2,652 to 2,911 cases); reported St. Louis County cases increased by 5.9 percent (from 2,194 to 2,324 cases); and reported Outstate cases increased by 1.2 percent (from 4,744 to 4,802 cases). Reported Kansas City cases decreased by 1.5 percent (from 2,657 to 2,618 cases).

Comment:
Large numbers of Missourians are infected with *Chlamydia trachomatis* each year. Because of incomplete information, the race of over one-third of reported cases is not known. However, based on available data, it appears that African Americans in Missouri are disproportionately affected by chlamydia, although not to the extent seen with

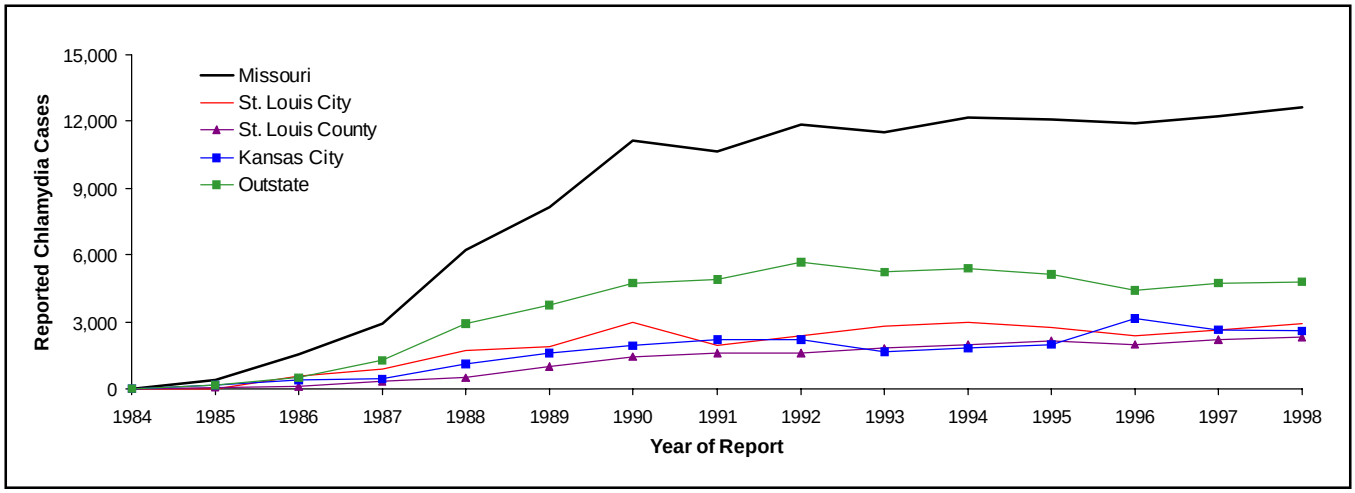

Figure 9. Reported chlamydia cases bygeographic area and year of report, Missouri, 1998.

syphilis and gonorrhea. For all racial groups, the largest numbers of cases are reported from persons in their late teens and early twenties; among females, the 15–19 year old age group has the most reported cases.

In 1998, the largest numbers of chlamydia cases were reported from Outstate Missouri, followed by St. Louis City, Kansas City, and St. Louis County. However, the highest case rates were in St. Louis City, followed by Kansas City, St. Louis County, and Outstate Missouri. Only one Missouri county did not report a chlamydia case in 1998.

No pronounced upward or downward trends have been seen in reported chlamydia cases in Missouri in the past few years; there have been very slight increases in the numbers of cases reported during the past two years. In 1998, the largest increases in reported cases were in St. Louis City and St. Louis County; in Kansas City, a very small decrease was seen.

Chlamydial infection is the most common bacterial STD in the United States today, and a major cause of pelvic inflammatory disease, infertility, ectopic pregnancy, and chronic pelvic pain. The large numbers of *C. trachomatis* infections that are continuing to occur in Missouri, the insidious nature of the infection, and its potentially severe consequences (especially in women) are all reasons for concern. The largest burden of infection is among teenagers and young adults, and in urban areas. As with other STDs, African Americans are disproportionately represented, although less so than with gonorrhea and syphilis. Chlamydia appears more widely distributed in the community than either syphilis or gonorrhea, and large numbers of cases occur in whites as well as in African Americans.

Because chlamydial infection frequently occurs without symptoms, the disease is often not diagnosed—or, in some instances, not diagnosed until complications develop. Consequently, screening of persons at increased risk for *C. trachomatis* infection, such as young, sexually active women, is very important in finding infected persons so that they (and their sex partners) can be treated and further spread of infection halted, and so that the extent of the infection can be determined. The numbers of chlamydia cases reported, and their distribution, significantly depend on where and in what populations screening is taking place. In this regard, the Missouri Infertility Prevention Project (MIPP) has been important in making chlamydia screening available to large numbers of young women throughout the state. This results in many additional infected individuals being detected, thus providing a more representative picture of chlamydia in Missouri.

Medical providers should promptly report, as required by Missouri law, all cases of chlamydial infection, gonorrhea, and syphilis to their local health department, or to MDOH's Office of Surveillance at (573) 751-6463.

STD education courses for medical professionals are available through the St. Louis STD/HIV Prevention Training Center. For more information, call (314) 747-0294 or 1522, or FAX (314) 362-1872, or visit their web site at: **http://www.umsl.edu/services/itc/std_ptc.html**.

Recommendations from the Centers for Disease Control and Prevention (CDC) for the treatment and prevention of sexually transmitted diseases were updated in 1998:**1998 Guidelines for Treatment of Sexually Transmitted Diseases, MMWR 1998;47(No. RR-1)**. These guidelines are available on the World Wide Web at: **http://www.cdc.gov/epo/mmwr/preview/ind98_rr.html**.

A number of links to STD-related web sites are available on the Missouri Department of Health Home Page at: **http://www.health.state.mo.us/GLRequest/ID/LinksSTD.html**.

1998–99 Influenza Summary

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The 1998–99 influenza season began on November 9, 1998, when an adult visitor from the state of Louisiana was diagnosed by the influenza rapid test method at a St. Louis Hospital. The isolate was forwarded to the Missouri State Public Health Laboratory (SPHL) and tested by viral culture method as influenza A, subtyped H3N2. On December 24, 1998, the first laboratory-confirmed case on a Missouri resident was reported as influenza A, subtyped as H3N2. Both isolates were sent to the Centers for Disease Control and Prevention (CDC). The two specimens were the first Missouri laboratory-confirmed cases of influenza A/Sydney/05/97-like (H3N2) for the 1998–99 season. This type was very similar to the influenza strain included in the vaccine for the 1999–2000 season.

There were 751 laboratory-confirmed cases of influenza reported in Missouri during the 1998–99 season. Of the 751 confirmed cases, 552 (74.3%) were type A, with 97 subtyped as H3N2. There were 193 (25.7%) confirmed cases of type B influenza reported in Missouri. The number of confirmed cases of influenza type A began increasing during week 52 and peaked during week 8, the week of February 21–28, 1999, then gradually returned to base line levels by week 16. See Figure 1.

Figure 2 shows laboratory-confirmed influenza cases by county of residence.

From December 1998 through March 1999, the Department of Health received five reports of influenza-like illness outbreaks in long-term care facilities. Three of the five outbreaks were confirmed as type A, two by rapid test method and one by viral culture performed by the SPHL.

From the middle of January 1999 to the middle of March 1999, nine schools

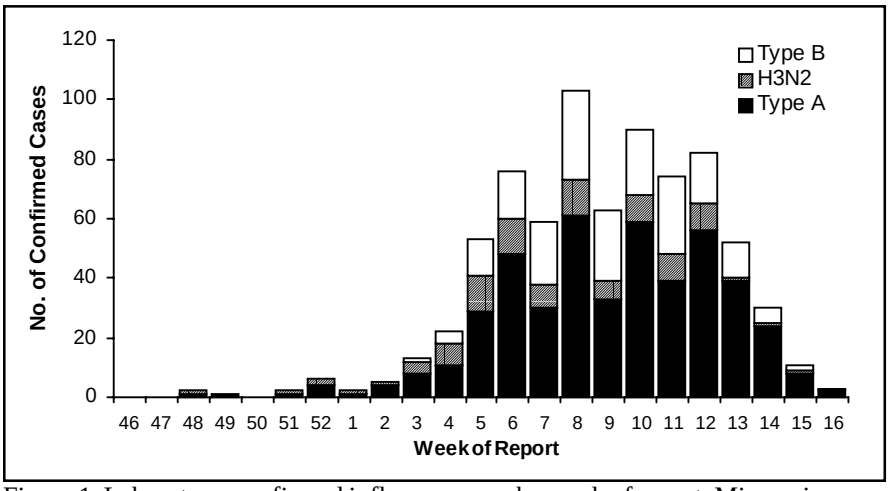


Figure 1. Laboratory-confirmed influenza cases by week of report, Missouri, 1998–99 season.

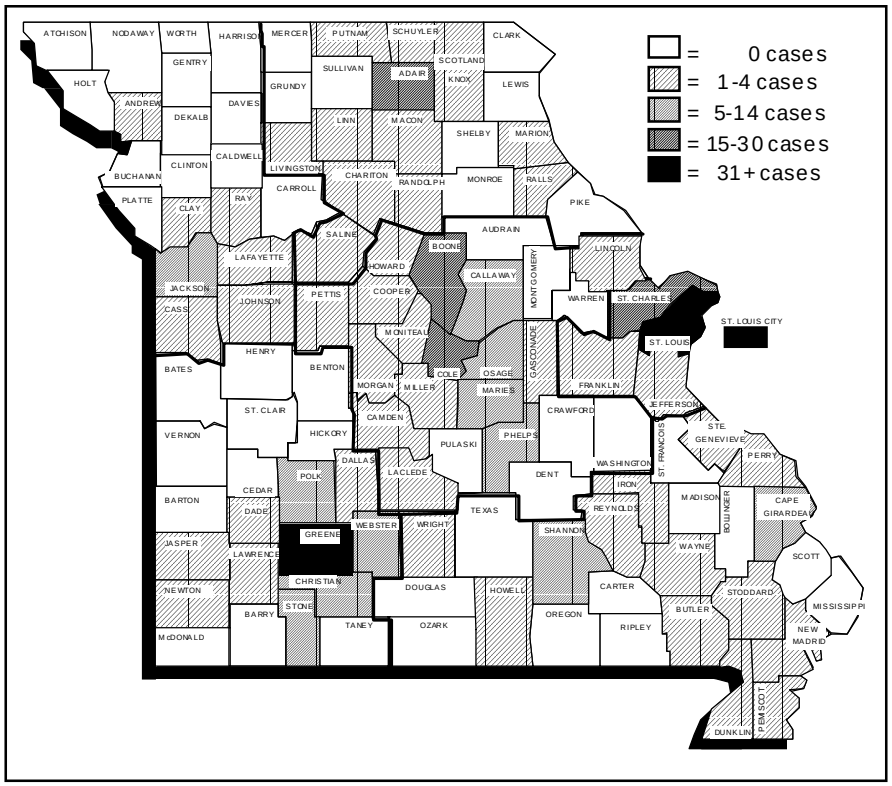


Figure 2. Laboratory-confirmed influenza cases by county of residence, Missouri, 1998–99 season.

cancelled classes from one to three days because of increased student, teacher, and staff absenteeism due to influenza-like illness. One group home, one university student health center, two correctional facilities and three communities reported to their local public health agency outbreaks of increased influenza-like illness. Two schools, one in the eastern area of the state and the other in the central area, reported increased incidence of influenza-like illnesses in students, but did not close. Cases related to the university outbreak were confirmed as both influenza type A, subtyped as H3N2, and also influenza,

type B. One of the community outbreaks occurred in Howard County and was confirmed as influenza, type B; another in Sedalia was confirmed as influenza A, (H3N2). A case related to a school in the eastern area of the state was identified as influenza A.

The established Missouri active surveillance sites reporting to local public health agencies submitted data showing a rise of influenza-like illness during week 2 that peaked during week 8 and gradually declined by week 16. The prolonged 1998–99 influenza season is best demonstrated by the slope of the curve that forms an irregular bell shape that rises higher when compared to the 10-year average curve. See Figure 3. The Missouri U.S. Influenza Sentinel Physicians reporting to CDC submitted data showing a slow irregular increase of influenza-like illness beginning in week 42, peaking during week 5, and gradually returning to baseline levels by week 14.

In Missouri, the number of pneumonia and influenza deaths rose above the previous 10-year average during weeks 46, 48, 49, 52 and 16. See Figure 4. The mortality experience in Missouri this season appears to be much less than that of the 1997–98 season and much less than reported from the nation as a whole. Nationally, beginning with the week ending January 30, 1999, the proportion of deaths attributed to pneumonia and influenza reported by 122 cities in the United States exceeded the epidemic threshold for 12 consecutive weeks. During the week ending March 13, 1999, the proportion of deaths attributed to pneumonia and influenza peaked nationally at 8.8 percent.

During the 1998–99 influenza season, CDC performed antigenic characterization of influenza viruses submitted to their laboratory through state health departments. Of the 327 isolates collected in the United States from October 4 through May 1, and antigenically characterized at CDC, 295 (90%) were similar to the 1998–99 A(H3N2) vaccine strain, A/Sydney/5/97, and 32 (10%) had antigenically drifted from A/Sydney/5/97 based on hemagglutination inhibition testing. Six United States influenza A(H1N1) isolates were characterized as A/Bayern/7/95-like viruses, antigenically distinct from A/Beijing/262/95, the 1998–99 A(H1N1) vaccine strain. However, the 1998–99 A(H1N1) vaccine strain produced high titers of antibodies that cross-react with A/Bayern/7/95. All 180 antigenically characterized B isolates were similar to the recommended type B vaccine strain, B/Beijing/184/93. Seventy-eight percent of the Missouri isolates sent to CDC for confirmation testing were reported as influenza A/Sydney/05/97-like (H3N2) and 22 percent were reported as influenza B/Beijing/184/93-like.

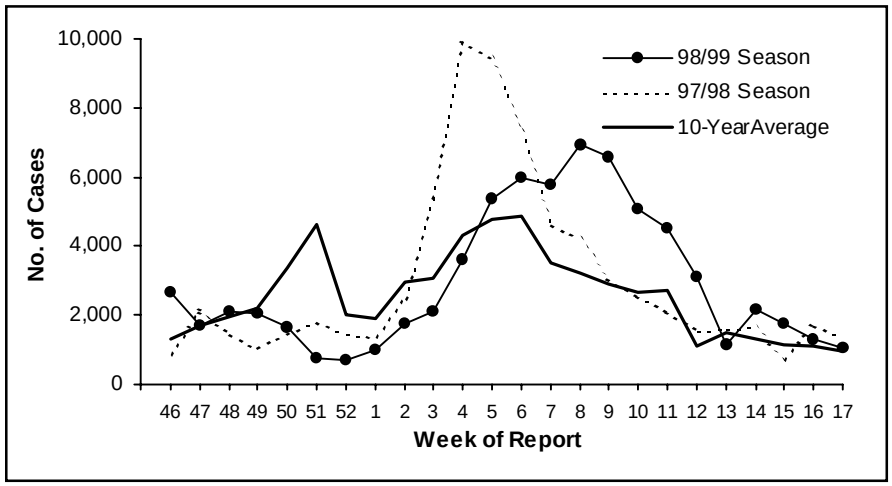


Figure 3. Influenza-like illness by week of report, Missouri, 1998/99 season, 1997/98 season and 10-year average.

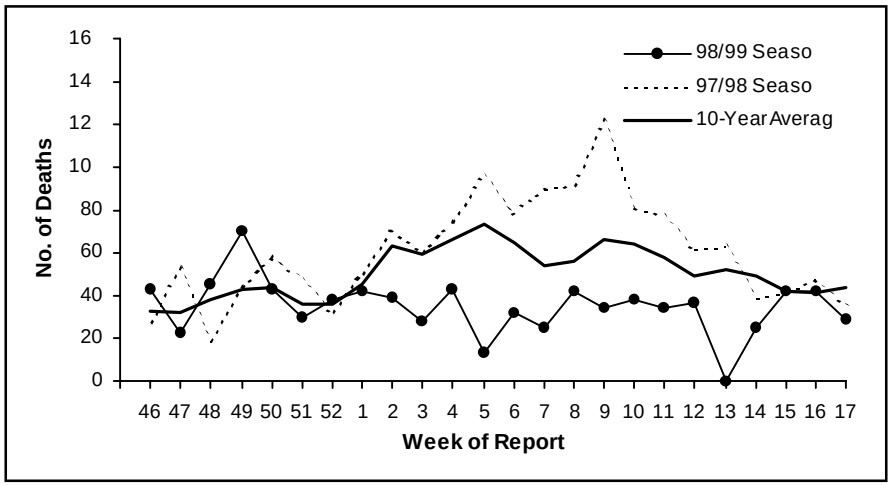


Figure 4. Pneumonia and influenza deaths by week of report, Missouri, 1998/99 season, 1997/98 season and 10-year average.

The Food and Drug Administration Vaccines and Related Biological Products Advisory Committee (VRBPAC) has recommended that the 1999–2000 trivalent influenza vaccine for the United States contain A/Beijing/262/95-like (H1N1), A/Sydney/5/97-like (H3N2), and B/Beijing/184/93-like hemagglutinin antigens. For the B/Beijing/184/93-like antigen, manufacturers in the United States will use the antigenically equivalent B/Yamanashi/166/98 virus because of its growth properties and because it is representative of currently circulating B viruses. Influenza vaccine recommendations for 1999–2000 can be found on pages 38–39 of this issue.

Global Climate Change and Public Health

Pamela Rice Walker, M.P.A.
Division of Environmental Health and Communicable Disease Prevention

Global Warming

There is a growing consensus among the scientific establishment that the earth's temperature is warming. The time series in Figure 1 shows, from 1880 to 1998, annual global surface mean temperature anomalies. 1998 was the warmest year since widespread instrument records began in the late Nineteenth Century. Seven of the ten warmest years have occurred in the 1990s.

The cause of this warming is the subject of much debate. Perceived causes include El Niño, deforestation, the urban heat island effect, naturally occurring cyclical warming of the earth's surface, naturally occurring cyclical warming of the sun, and atmospheric pollution caused by man, also known as greenhouse gas emissions. Much attention has been focused on the impact of greenhouse gas emissions because it is one of the few potential factors that can be mitigated.

Greenhouse gases are intensified by the combustion of fossil fuels. See Figure 2. Increased energy use in cars, homes and for industrial purposes raises the concentrations of carbon dioxide (CO_2) and other gases in the atmosphere. CO_2 has increased 30 percent, from 280 to 360 parts per million, since 1860. The overall emissions of greenhouse gases are growing at about one percent per year. Fluctuations in temperature and CO_2 have mirrored each other for 160,000 years. CO_2 levels are higher now than any time during that period. Predictions related to the effect of greenhouse gases include:

1. Atmospheric concentrations of CO_2 and other gases will continue to increase;

2. Increases in the concentrations of these gases will lead to changes in climate such as temperature, precipitation, and storm frequency and severity; and

3. Changes in climate will have significant economic, ecosystem and human health effects.

The Public Health Impact

Factors that affect the vulnerability of certain populations, such as poor sanitation, crowding, poverty and food scarcity, make it difficult to quantify the impact of global warming in terms of lives lost or further deterioration in the quality of life for most of the world's population. However, extreme climatic changes for which vulnerable populations are not prepared would most certainly increase hunger, homelessness, and diseases such as malaria and typhoid.

Here in Missouri, a few degrees increase in global warming would cause localized variances in weather conditions that could be extreme. Cold spells still would occur in winter but hotter temperatures in the summer would be more extreme and more common. Missouri already experiences irregular, intense heat waves that impact on health. For example, in Missouri there were 819 heat-related illnesses reported in 1995, 512 reported in 1990 and 470 reported in 1998, but only 35 reported in 1992. The final analysis of heat-related mortality is not complete as

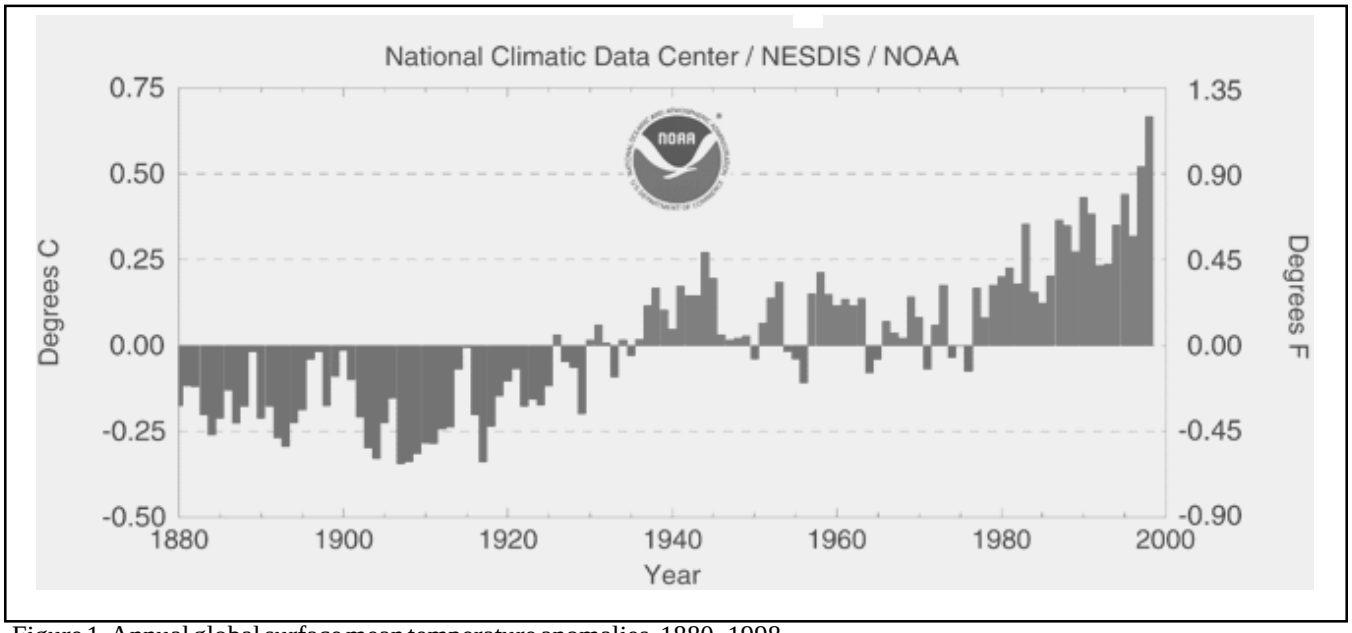


Figure 1. Annual global surface mean temperature anomalies, 1880–1998.

of this writing, but there may be in excess of 65 heat-related deaths in 1999 compared to 12 in 1998 and 9 in 1997. See Figures 3 and 4. During 1979–96, the years for which data are available, Missouri had the second highest age-adjusted rate for heat-related deaths "due to weather conditions" (3 per million population) in the United States.

Fluctuations in weather patterns would cause some areas to become drier and other areas to become wetter, therefore changing and possibly expanding the habitat of disease-carrying insect vectors. Nighttime temperatures are rising faster than daytime temperatures. The range of many disease-carrying insects is limited by nighttime temperatures. Mosquitoes are common vectors in Missouri. If the climate becomes wetter and warmer, mosquito populations could increase, thereby increasing the risk of exposures to the diseases which they carry. For example, St. Louis encephalitis, Eastern equine encephalitis, and LaCrosse encephalitis are more common in years when the temperature is higher than normal. Malaria kills an estimated two million people a year worldwide. In recent years, cases of malaria contracted from local mosquitoes have been reported in New York, New Jersey, Virginia, Texas, Georgia, Florida and Michigan.

If weather patterns change, storms could become more intense. Precipitation could come in intense, short bursts causing more localized flash flooding. Severe weather such as high winds and tornadoes could increase. No one can forget the devastating floods of 1993, but many do not know that in 1998, 18 lives were lost in Missouri due to flooding. With an increased volatility in climate, health problems associated with natural disasters would increase.

Finally, ground level ozone air pollution concentrations increase during heat waves. Ozone is a major component of smog that has been shown to reduce lung function, induce respiratory inflammation, and aggravate respiratory illnesses such as asthma. Asthma affects

(continued on page 18)

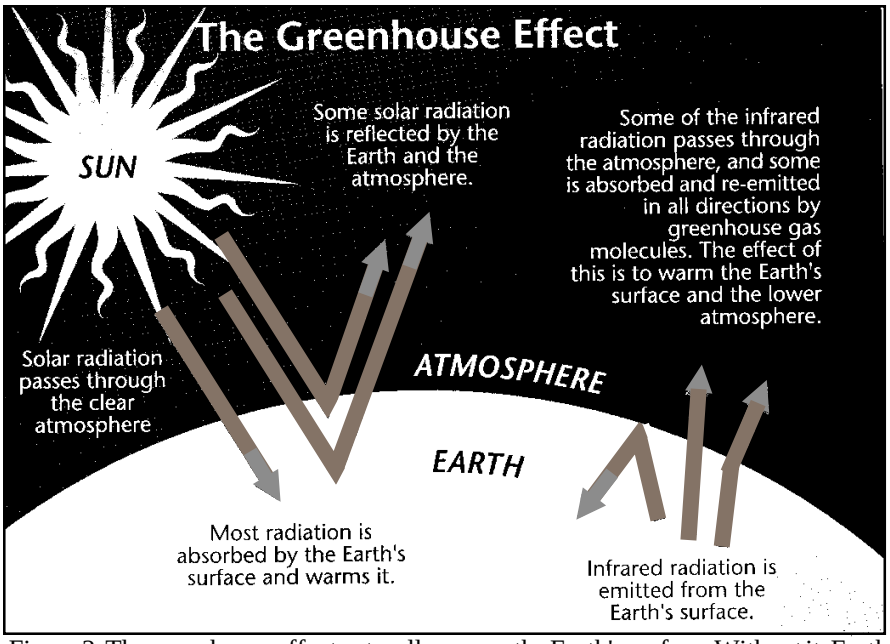


Figure 2. The greenhouse effect naturally warms the Earth's surface. Without it, Earth would be 60° F cooler than it is today—uninhabitable for life as we know it.

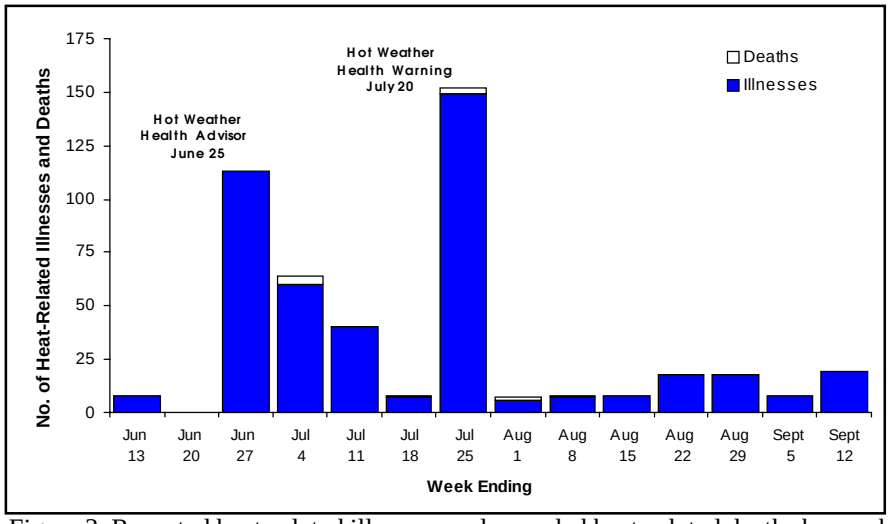


Figure 3. Reported heat-related illnesses and recorded heat-related deaths by week of occurrence, Missouri, Summer 1998.

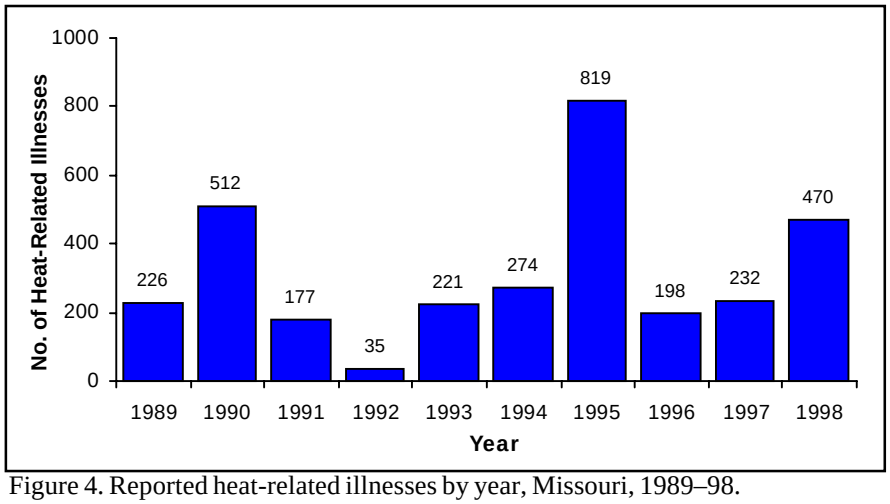


Figure 4. Reported heat-related illnesses by year, Missouri, 1989–98.

(continued from page 17)
over 14 million Americans, including five million children. In 1990, the estimated cost of asthma was $6.2 billion and by 2000 it is expected to reach $14.5 billion. St. Louis is already classified as a moderate nonattainment area for ozone.

What Public Health Leaders Can Do

Although the debate continues as to a final determination of cause, public health officials are beginning to study the implications of global warming and develop mitigation plans for potential increases in population-based illnesses such as vector-borne or heat-related illnesses. Public health leaders have learned that, in public health as in medicine, sometimes it is critical to begin treatment before being absolutely sure of what is wrong.

Disease outbreaks are impacted by a complex system of biological, infrastructure and environmental factors that are easier dealt with by industrialized, wealthy nations. For example, cholera will probably not become a threat in epidemic proportions in Missouri as long as water treatment systems are maintained and effective. In 1995, six cases of dengue fever were reported in Texas, while 4,000 were reported in close proximity, in Mexico. The low case rate in Texas has been attributed to better housing, air conditioning, vector control programs and socioeconomic conditions.

Dr. Denny Donnell, Missouri State Epidemiologist, says "Considering the high number of heat-related illnesses reported in Missouri in 1998, one would expect to have seen more heat-related deaths. This lower number of deaths may reflect the effectiveness of public health efforts to educate the public to recognize heat-related illness and seek medical treatment promptly."

After a severe heat emergency in 1980 that took 294 lives in Missouri, the state and the municipalities of St. Louis, Kansas City and Springfield took steps to plan for future heat waves. The top ten leading factors that put people at risk have been identified. These include the inability to care for oneself, such as the very young or elderly. Also, urban building design with flat, black roofs and poor air circulation creates a risk for those living on the top floor of a building. City and social service agencies have signed formal contracts to coordinate services. The Salvation Army and Red Cross provide shelters, the AmerenUE utility company provides window air conditioners on loan, and senior centers reach out to high-risk seniors. Finally, state and city officials have agreed on a common language for hot weather health advisories.

In March 1998, the Environmental Protection Agency, the Centers for Disease Control and Prevention, the American Medical Association, the American Public Health Association, the National Environmental Health Association and the National Institutes of Health co-sponsored the first joint conference on *Emerging Public Health Threats and the Role of Climate Change*. This conference signified the first major step toward the realization that public health leaders must define their role and accept accountability to respond to this public health threat.

In order for public health officials in Missouri to meet this challenge, they should consider the following key responsibilities:

- Identifying the diseases associated with changing climatic conditions through better research and surveillance techniques;
- Understanding the complex systems impacting public health, including climatic changes;
- Assessing the risks to certain vulnerable populations such as the poor, elderly or the very young;
- Informing the public of emerging trends in disease;
- Informing the public about how to minimize their risk;
- Encouraging interventions like heat warning systems, better urban building design and energy conservation;
- Improving our emergency response capacity and early warning systems;
- Involving non-governmental community agencies and private entities in the development of effective interventions

Public health leaders have effectively identified significant risks to public health over the past century. They have identified the need for better sanitation practices, declared smoking a public health risk, spoken out about sexually transmitted diseases, identified violence as a public health risk, and developed interventions to help curtail illness associated with both communicable and chronic diseases. Recognizing global warming as a potential public health threat that can be mitigated through traditional public health interventions and practices is critical to the public health system's readiness to reduce illness and death associated with extreme climatic events.

Thanks to Lauren Holtkamp for her assistance in obtaining statistics for this article.

See pages 19–20 for 20 simple steps that you and your family can take to help reduce global warming.

REFERENCES:

1. Electric Power Research Institute (EPRI), Environment Division Home Page. Assessment of the potential impacts of global climate change. **http://www.epri.com/targetDesc.asp?program=161&objid=4222**
2. EPA, Office of Policy, Planning and Evaluation. Climate change and Missouri. EPA 230-F-97-008y. September 1997. **http://www.epa.gov/oppeoee1/globalwarming/impacts/stateimp/missouri/index.html**
3. Executive Office of the President, Office of Science and Technology.

(continued on page 27)

20 Simple Steps to Reduce Global Warming

Whenever you save energy—or use it more efficiently—you reduce the demand for gasoline, oil, coal and natural gas. Less burning of these fossil fuels means lower emissions of carbon dioxide, the major contributor to global warming. Right now the United States releases about 40,000 pounds of carbon dioxide per person each year. If we can reduce energy use enough to lower greenhouse gas emissions by about 2% a year, in ten years we will "lose" about 7,000 pounds of carbon dioxide emissions per person.

Here are 20 simple steps that can help cut your annual emissions of carbon dioxide by thousands of pounds. The carbon dioxide reduction shown for each action is an average saving.

HOME APPLIANCES

1. Run your dishwasher only with a full load. Use the energy-saving setting to dry the dishes. Don't use heat when drying.
   Carbon dioxide reduction: 200 pounds a year.

2. Wash clothes in warm or cold water, not hot.
   Carbon dioxide reduction (for two loads a week): up to 500 pounds a year.

3. Turn down your water heater thermostat; 120 degrees is usually hot enough.
   Carbon dioxide reduction (for each 10-degree adjustment): 500 pounds a year.

HOME HEATING AND COOLING

4. Don't overheat or overcool rooms. Adjust your thermostat (lower in winter, higher in summer).
   Carbon dioxide reduction (for each 2-degree adjustment): about 500 pounds a year.

5. Clean or replace air filters as recommended. Cleaning a dirty air conditioner filter can save 5% of the energy used.
   Carbon dioxide reduction: About 175 pounds a year.

SMALL INVESTMENTS THAT PAY OFF

6. Buy energy-efficient compact fluorescent bulbs for your most-used lights.
   Carbon dioxide reduction (by replacing one frequently used bulb): about 500 pounds a year.

7. Wrap your water heater in an insulating jacket.
   Carbon dioxide reduction: Up to 1,000 pounds a year.

8. Install low-flow shower heads to use less hot water.
   Carbon dioxide reduction: Up to 300 pounds a year.

9. Caulk and weatherstrip around doors and windows to plug air leaks.
   Carbon dioxide reduction: Up to 1,000 pounds a year.

10. Ask your utility company for a home energy audit to find out where your home is poorly insulated or energy-inefficient.
    Carbon dioxide reduction: Potentially, thousands of pounds a year.

GETTING AROUND

11. Whenever possible, walk, bike, carpool or use mass transit.
    Carbon dioxide reduction (for every gallon of gasoline you save): 20 pounds.

12. When you buy a car, choose one that gets good gas mileage.
    Carbon dioxide reduction (if your new car gets 10 mpg more than your old one): about 2,500 pounds a year.

REDUCE, REUSE, RECYCLE

13. Reduce waste: Buy minimally packaged goods; choose reusable products over disposable ones; recycle.
    Carbon dioxide reduction (if you cut down your garbage by 25%): 1,000 pounds a year.

14. If your car has an air conditioner, make sure its coolant is recycled whenever you have it serviced.
    Equivalent carbon dioxide reduction: Thousands of pounds.

HOME IMPROVEMENTS

15. Insulate your walls and ceilings; this can save about 25% of home heating bills.
    Carbon dioxide reduction: Up to 2,000 pounds a year.

16. If you need to replace your windows, install the best energy-saving models.
    Carbon dioxide reduction: Up to 10,000 pounds a year.

17. Plant trees next to your home and paint your home a light color if you live in a warm climate, or a dark color in a cold climate.
    Carbon dioxide reduction: About 5,000 pounds a year.

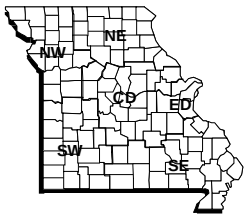
18. As you replace home appliances, select the most energy-efficient models.
    Carbon dioxide reduction (if you replace your old refrigerator with an efficient model): 3,000 pounds a year.

SCHOOLS, BUSINESS, AND COMMUNITIES

19. Reduce waste and promote energy-efficient measures at your school or workplace. Work in your community to set up recycling programs.
    Carbon dioxide reduction (for every pound of office paper recycled): 4 pounds.

20. Be informed about environmental issues. Keep track of candidates' voting records and write or call to express concerns.
    Carbon dioxide reduction (if we vote to raise U.S. auto fuel efficiency): Billions of pounds.

Source: Environmental Defense Fund Web Site at **http://www.edf.org**.



Missouri Department of Health
Division of Environmental Health and Communicable Disease Prevention

QUARTERLY DISEASE REPORT

Reporting Period*
April - June 1999

	Districts											3 Month State Totals		Cumulative		
	CD	** ED	NE	** NW	SE	** SW	*** OTHER	Kansas City	St. Louis City	St. Louis Co.	Spfd. Greene Co.	1999	1998	For 1999	For 1998	5 YR MEDIAN
Vaccine Preventable																
Influenza	14	10	2	3	7	2		3	19	71	2	133	12	824	1073	227
Measles	0	0	0	0	0	0		0	0	0	0	0	0	0	0	1
Mumps	0	0	0	0	0	0		0	0	0	0	0	1	0	3	3
Pertussis	0	0	0	1	0	0		3	1	0	0	5	7	15	16	17
Viral Hepatitis																
A	4	3	0	7	23	16		5	1	6	27	92	172	204	350	511
B	1	3	0	1	2	6		17	11	9	2	52	62	97	125	193
C	0	0	0	1	0	1		19	0	1	0	22	2	59	5	N/A
Non-A Non-B	0	0	0	0	0	0		0	0	0	0	0	0	0	1	8
Unspecified	0	0	0	0	0	0		0	0	0	0	0	0	0	2	1
Meningitis																
Meningococcal Disease	1	2	0	1	1	1		3	0	0	2	11	5	35	13	29
Meningococcal Other	2	1	1	0	0	0		1	4	3	1	13	16	24	39	24
Enteric Infections																
Campylobacter	22	4	7	22	23	22		12	8	28	12	160	144	247	213	258
E. Coli O157:H7	4	0	0	3	2	2		0	0	0	1	12	9	17	12	13
Salmonella	55	13	8	30	27	25		18	17	20	8	221	171	300	240	231
Shigella	21	8	0	19	0	60		8	50	75	16	257	31	366	51	180
Parasitic Infection																
Cryptosporidiosis	4	0	0	0	0	0		0	0	1	1	6	7	11	8	N/A
Giardiasis	23	15	21	8	4	15		13	37	26	10	172	142	283	275	275
Respiratory Diseases																
Legionellosis	0	0	0	1	1	1		0	0	1	2	6	2	8	8	8
Sexually Transmitted																
AIDS	12	4	0	8	4	11	4	31	32	9	3	118	148	191	222	177
HIV Infection	19	6	4	11	6	6	1	28	31	14	9	135	112	223	211	N/A
Chlamydia	270	118	78	156	221	318		790	871	636	****	3458	2800	6959	5645	N/A
Gonorrhea	80	19	20	33	115	46		520	553	322	****	1708	2514	3550	4152	N/A
P & S syphilis	1	0	0	0	1	1		5	7	4	****	19	23	50	57	N/A
Tuberculosis																
TB Disease	3	1	2	0	9	0	1	7	8	11	1	43	45	77	73	N/A
TB Infections	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Zoonotic																
Ehrlichiosis	3	0	0	1	0	1		0	0	0	1	6	0	6	0	N/A
Lyme-like Disease	0	0	0	0	0	0		0	0	0	0	0	6	0	6	20
Rabies (Animal)	0	0	0	0	4	0		0	0	0	0	4	12	9	20	14
Rocky Mountain Spotted Fever	2	1	0	3	0	0		0	0	1	0	7	2	8	2	6
Tularemia	3	0	1	0	0	2		0	0	0	0	6	3	6	3	5

Outbreaks
Foodborne - 4
Waterborne - 1
Salmonella - 2
Scabies - 1
Shigella - 1
Other - 2

Low Frequency Vaccine Preventable Diseases
Diphtheria
Hib Meningitis
Hib other invasive - 8
Polio
Rubella - 2
Tetanus

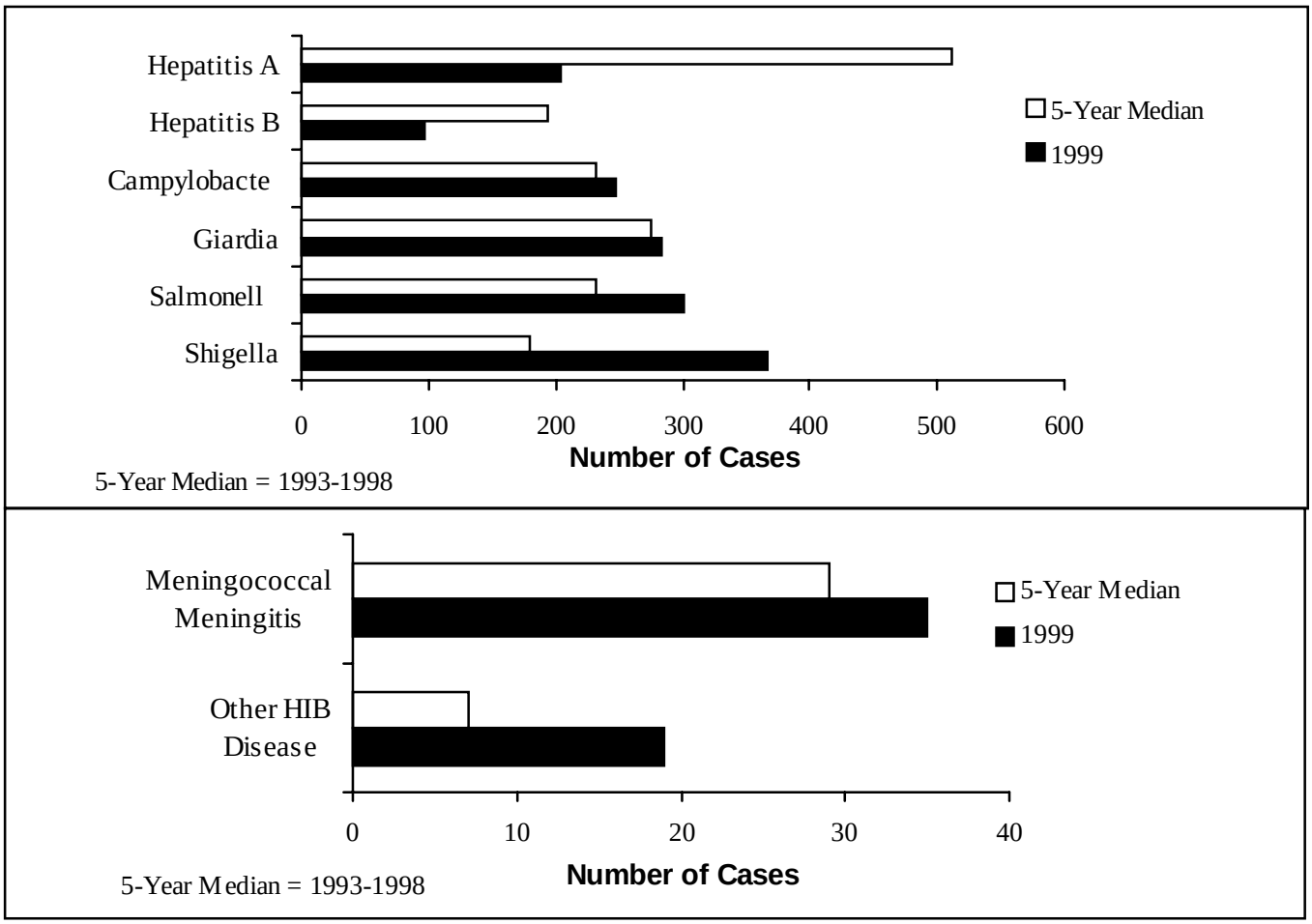
Low Frequency Diseases
Anthrax
Botulism
Brucellosis
Chancroid
Cholera
Encephalitis
Granuloma Inguinale
Kawasaki Disease - 4
Leptospirosis
Listeria - 4
Lymphogranuloma Venereum
Plague
Psittacosis
Rabies (human)
Reye syndrome
Rheumatic fever, acute
Streptococcal Disease, Invasive, Grp A - 9
Streptococcus pneumoniae, Drug Resistant Invasive Disease
Toxic Shock Syndrome - 1
Trichinosis
Typhoid Fever

*Reporting Period Beginning April 4, 1999 and Ending June 26.
**Totals do not include Kansas City, St. Louis City, St. Louis County, or Springfield
***State and Federal Institutions
****Included in SW District
N/A Data unavailable

Due to data editing, totals may change

TEAR OUT FOR FUTURE REFERENCE

Disease Reports, January–June 1999 and 5-Year Median



Viral Hepatitis

The 204 cases of hepatitis A reported during the January–June, 1999 time period represent a decrease of 41.7%, from the 350 cases of hepatitis A during January–June 1998. The bulk of the cases are still being reported from the Southwestern Health District. The 204 cases represent a decrease of 60.1% from the five-year median of 511.

Hepatitis B declined 22.4% from 125 in 1998 to 97 in 1999 from the six-month period and is 49.7% below the five-year six-month median for January–June of 193 cases.

Enterics

Campylobacter rose by 16.0% during the monthly time period from 213 cases in 1998 to 247 cases in 1999. It fell 4.3% from the five-year median of 258 cases. Salmonella increased 25.0% from 240 cases in 1998 to 300 cases in 1999. This is an increase of 29.9% over the five-year median of 231 cases. Shigellosis increased 617.6% from 51 cases in 1998 to 366 cases in 1999 and 103.3% from the five-year median of 180. The large increase in cases was due to outbreaks in daycare facilities and schools in the Southwestern and Eastern health districts. Pulsed Field Gel Electrophorosis testing of specimens from these outbreaks found different subtypes indicating these outbreaks were unrelated to each other.

Parasites

Giardiasis increased slightly by 2.9% from 275 cases in 1998 to 283 cases in 1999 for the January–June time period. The number of cases for the six-month period for 1998 is the same as the five-year median for the time period.

Meningitis

Meningococcal meningitis rose by 169.2% from 13 cases in 1998 to 35 cases in 1999. This is an increase of 20.7% from the five-year median of 29 cases.

Hib Disease

No cases of Hib meningitis were reported for this time period in 1999. No cases were reported for this time period as well in 1998, 1997 and 1996. Other invasive Hib disease rose 171.4% from 7 cases in 1998 to 19 cases in 1999. The number of cases for the six-month period for 1998 is the same as the five-year median for the time period.

Missouri Department of
HEALTH
Division of Environmental Health and Communicable Disease Prevention
Section of STD/HIV/AIDS Prevention and Care Services
P.O. Box 570, Jefferson City, MO 65102-0570 ▪ 573-751-6439 ▪ FAX 573-751-6447

HIV/AIDS Case Management Contractors

TEAR OUT FOR FUTURE REFERENCE

Northwest Region

St. Joseph/Buchanan Co. Health Department (1½)

Central Region

A = Adair Co. Health Department (¾)

M = Marion Co. Health Department (¾)

R = Regional AIDS Interfaith Network (2)

P = Pettis Co. Health Department (½)

C = Cole Co. Health Department (½)

St Louis Region

St. Louis Department of Health and Hospitals (11)

Kansas City Region

Kansas City Health Department (10)

Southeast Region

B = Butler Co. Health Department (1)

G = Cape Girardeau Co. Public Health Center (1)

F = St. Francois Co. Health Department (1)

Southwest Region

S = Springfield/Greene Co. Health Department (5½)

J = Joplin City Health Department (1½)

N = Newton Co. Health Department (½)

(#) = Number of service coordination positions funded through DOH contracts.

Change in Financial Eligibility Criteria for Missouri's Statewide AIDS Drug Assistance Program (ADAP)

The financial eligibility criteria for the Missouri Statewide AIDS Drug Assistance Program (ADAP) is changing. Currently, the financial eligibility is at or below 185 percent of the Federal Poverty Level. **Effective September 1, 1999,** all eligibility criteria will remain the same except the upper financial eligibility limit for all medications assistance programs administered by the Missouri Department of Health will be **at or below 300 percent of the Federal Poverty Level**. See Client Eligibility below.

The goal of this increase in financial eligibility criteria is to expand access to expensive antiretroviral combination therapy for persons living with HIV/AIDS.

The benefits of antiretroviral combination therapy include reductions in HIV morbidity and mortality. However, costs for a month of antiretroviral combination therapy range from $900–$1200 or higher, depending on the specific medications utilized. These monthly costs often exceed the financial resources of many persons living with HIV/AIDS. By increasing the financial eligibility criteria, more persons living with HIV/AIDS may receive assistance, if eligible.

The Missouri Statewide AIDS Drug Assistance Program (ADAP) is briefly outlined below:

Purpose:

The purpose of the Missouri Statewide ADAP is to provide medications used in the treatment of eligible persons with HIV or AIDS throughout the state.

Overview:

The Missouri Department of Health implemented the Statewide ADAP in November 1996. ADAP uses a formulary of eligible medications and program criteria that are the same for the whole state.

ADAP uses federal Ryan White Title II funds and state general revenue funds to provide people living with HIV/AIDS with life-sustaining medications.

ADAP works with other existing programs, such as regional Ryan White Title II and Title I in Kansas City and St. Louis, reaching individuals who do not receive assistance for payment of medications from other sources such as Medicaid, private insurance or Medicare. ADAP also helps ensure equal access to AIDS medications throughout the state.

Client Eligibility:

In order to be eligible for ADAP benefits, a person must:

- ✓ Be a Missouri resident;
- ✓ Have a verified HIV-positive diagnosis;
- ✓ Be enrolled in HIV/AIDS case management;
- ✓ Not be eligible to receive HIV medications through any other program, private insurance or other third party payer; and
- ✓ Meet financial eligibility criteria (contact an HIV/AIDS case manager for more information on financial eligibility).

Eligible Medications:

Drugs included in the Statewide ADAP formulary are those recommended by the Missouri HIV/AIDS Medications Advisory Committee, which consists of medical professionals and persons living with HIV/AIDS from across the state.

Access to Medications:

ADAP program funds are sufficient to provide access to medications to only a limited number of persons. The high cost of medications restricts the number of individuals who can receive drugs at any given time. Each eligible person who is interested in accessing medications through ADAP will be required to obtain a prescription from his/her physician and contact his/her HIV/AIDS case manager. Individuals who enroll when ADAP is at full capacity will be put on an access waiting list.

Medical Guidelines:

Highly Active Antiretroviral Therapy (HAART) is now the standard of care for patients receiving therapy for HIV/AIDS. In most cases, this means therapy with a minimum of three antiretroviral drugs.

The Missouri ADAP program has adopted guidelines from the Panel on Clinical Practices for Treatment of HIV Infection, convened by the Department of Health and Human Services (DHHS) and the Henry J. Kaiser Family Foundation, and also from the U.S. Public Health Service and the Infectious Diseases Society of America (USPHS/IDSA), as the recommended standards of care.

The most current medical guidelines, along with other information on HIV treatment, are available on the Internet at **http://www.hivatis.org/**

Adherence:

The Department of Health strongly encourages individuals to speak to a physician or other qualified individual regarding the effects of medications and the importance of adhering to prescribed medication regimens.

For more information on the Statewide ADAP, contact an HIV/AIDS case manager in your area (see map on page 23), or contact the Section of STD/HIV/AIDS Prevention and Care Services, P.O. Box 570, Jefferson City, MO 65102, Ph: (573) 751-6439 or (800) 359-6259.

U.S. Influenza Sentinel Physician Surveillance Network

Mary E. Kliethermes, R.N., B.S.
Section of Communicable Disease Control and Veterinary Public Health

For the third year, the Missouri Department of Health will participate in the Centers for Disease Control and Prevention (CDC) influenza surveillance project called the U.S. Influenza Sentinel Physician Surveillance Network. The program is designed as an active surveillance system to provide CDC with current influenza-like illness information during the influenza season. Last season, 39 states and the District of Columbia collaborated with CDC on this project. The 1999–2000 influenza season begins the week of October 9, 1999, and goes through the week of May 20, 2000.

The success of this program relies on physicians and nurse practitioners working in a collaborative practice to collect influenza-like illness surveillance numbers. CDC defines **influenza-like illness** as fever $\geq$100° Fahrenheit (37.8° C) and cough or sore throat, in the absence of a known cause. Throughout the influenza season, physicians are asked to tally weekly the number of patients, stratified by age group, that they treat with symptoms of influenza-like illness and the total number of patients seen during the same week. Prior to noon on Tuesday of the following week, physicians are asked to call a dedicated phone number using an assigned ID code and enter the week's data by touch-tone code, or they can fax the data in. This year, physicians will also have the option to report data via the Internet, which promises to be more convenient and provides CDC with "real-time" data. Throughout the season, influenza sentinel physicians can review the data through a special password-protected Internet site.

To enhance this program and to provide CDC with additional data, the Missouri State Public Health Laboratory (SPHL) will supply each physician participating in the influenza sentinel physician surveillance network with viral culture kits and instructions on proper collection, storage and shipping methods. During the influenza season, each sentinel physician will be able to ship two viral cultures per week for testing to the SPHL. Results of the viral cultures, as well as select isolates, will be forwarded to CDC throughout the season and will be used to identify the circulating influenza strain. In addition, this information will be used to help determine the components of the vaccine for the next influenza season. The information can also be used to identify viral drifts or shifts and serve as a pandemic warning.

The Department of Health is in the process of developing plans for the 1999–2000 influenza season and would like to improve the sentinel physician surveillance representation in Missouri. The department hopes to recruit many more physicians, especially those practicing in the metropolitan areas, so that the influenza surveillance data more equally represents the areas of Missouri's population centers.

If you are a Missouri physician, or nurse practitioner working in collaboration with a physician, and are interested in participating in or would like more information about the U. S. Influenza Sentinel Physician Surveillance Network, please contact your local public health agency or the Section of Communicable Disease Control and Veterinary Public Health at (573) 751-6113 or (800) 392-0272.

Communicable Disease Control 1998 Annual Report

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health district which reported 210 cases, although there was a smaller increase in the number of cases from the Northwestern health district (37 to 71 cases). Statewide, this represents an 81.1 percent increase from the 5-year median of 175 cases.

No cases of *Haemophilus influenza* type B (Hib) meningitis were reported in 1998, continuing the downward trend since the introduction of the vaccine. There were ten cases of Hib other than meningitis, up from last year's count of seven cases. All cases occurred in persons above 40 years of age.

REFERENCES:

1. Missouri Department of Health. Tuberculosis annual report for 1998. Missouri Epidemiologist 1999;21(3): 6–8.
2. Missouri Department of Health. Vaccine-preventable disease 1998 annual report. Missouri Epidemiologist 1999;21(3):25.
3. Missouri Department of Health. Tick-borne disease summary—1998. Missouri Epidemiologist 1999;21(3): 18–19,28.
4. Missouri Department of Health. 1998 Mosquito-borne disease surveillance program. Missouri Epidemiologist 1999;21(3): 20–21.
5. Missouri Department of Health. Animal rabies surveillance—1998. Missouri Epidemiologist 1999;21(3): 26–27.
6. CDC. Case definitions for infectious conditions under public health surveillance. MMWR 1997;46(RR-10).
7. CDC. Recommendations for prevention and control of hepatitis C virus (HCV) infection and HCV-related chronic disease. MMWR 1998;47(No. RR-19).

Partners in Early Breast Cancer Detection: The National Breast Cancer Awareness Month Movement and Missouri's Breast and Cervical Cancer Control Project

Mike Murray
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Division of Chronic Disease
Prevention and Health Promotion

October 1999 will mark the 15th annual observance of National Breast Cancer Awareness Month (NBCAM). The nationwide educational campaign will again try to raise the American public's awareness of the importance of breast cancer screening and early breast cancer detection. For most of its 15 years, NBCAM has sought to reach women who are "medically underserved"—women who don't receive health information and don't have access to health care. Since 1992, the Missouri Department of Health's Breast and Cervical Cancer Control Project (BCCCP) has piggybacked on the NBCAM effort, sharing its ample spotlight to inform the medically underserved women of Missouri about BCCCP's no-cost mammography program.

If the gradual nature of its increased incidence over several decades were ignored, breast cancer would be described as epidemic. An estimated 175,000 new cases of invasive breast cancer are expected to occur in women during 1999. It is, by far, the most diagnosed cancer in American women. The American Cancer Society makes the statistical claim that one in nine women will develop breast cancer at some point in her life. Over 43,000 Americans, including about 400 males, are expected to die of breast cancer this year.

Breast cancer in Missouri mirrors the national situation in several important ways. The breast is the leading site of new cancer cases in Missouri women, and breast cancer is the second leading cause of cancer deaths in female Missourians. The American Cancer Society estimates that 900 Missouri women will die of breast cancer in 1999. Of special concern to Missourians is the breast cancer mortality rate for African-American women in the state, which has generally exceeded the national rate since 1985.

Despite the identification of numerous risk factors for breast cancer, most of them exist at levels too low to explain the high frequency of the disease in state and national populations. Few of these risks are subject to behavioral or environmental modification. Although new research about BRCA1 and BRCA2 susceptibility genes for breast cancer appears promising, and while recent studies suggest that selective estrogen receptor modulators such as tamoxifen and raloxifene may reduce women's risk of developing breast cancer, early detection of the disease remains the key to mortality reduction.

Mammography can identify breast abnormalities indicative of cancer long before physical symptoms appear. Early detection increases treatment options and enhances survival. Early detection of localized breast cancer tumors leads to five-year survival rates as high as 97 percent, and studies of mammography screening programs have asserted mortality rate declines between 17 and 33 percent. The American Cancer Society, the American College of Surgeons, the American Medical Women's Association, and, most recently, the American Medical Association recommend that all women get mammograms annually starting at age 40. (Due to federal guidelines, however, women generally must be age 50 or older to obtain annual screening mammograms through the Missouri Breast and Cervical Cancer Control Project.)

Early breast cancer detection and universal access to mammography are NBCAM's central themes. Seventeen national service organizations, professional associations, and government agencies will sponsor this October's nationwide media blitz. Radiology facilities across the country will offer mammograms at reduced rates. Health- and cost-conscious employers will educate their female workers on the importance of breast cancer screening.

October is National Breast Cancer Awareness Month

The National Breast Cancer Awareness Month website can be found at **http://www.nbcam.org**.

For information on statewide breast cancer awareness activities in Missouri, contact:

American Cancer Society, Columbia, MO
Ph: (800) 429-7753

Seven Fortune 500 corporations have purchased or leased their own mammography equipment and will provide no- or low-cost mammograms to female employees.

Local groups are planning special screening events, conferences, and fundraisers for October. Mobile mammography screenings, some at no cost to participants, are scheduled for communities in South Carolina, New York, and New Jersey. Medical conferences scheduled in October include the first Lynn Sage Breast Cancer Symposium in Chicago, a Cancer Care–M.D. Anderson event in Houston, and Harvard Medical School's annual breast cancer conference in Boston. Noncompetitive race/walks in Atlanta, Boise, Los Angeles, Santa Monica, and Tucson will raise funds this October for breast cancer research. Throughout the Northeast, church bells will ring or special moments of silence will be observed in memory of breast cancer victims.

Missouri's Breast and Cervical Cancer Control Project (BCCCP) raises its profile during NBCAM. Since 1992, BCCCP has provided no-cost breast and cervical cancer screenings and follow-up diagnostic services for Missouri women who meet age and income guidelines. The project networks 126 service providers statewide, including physicians, clinics, hospitals and local public health agencies. Each year during Breast Cancer Awareness Month, BCCCP supplies promotional materials to its providers and places TV, radio, and print advertisements statewide. Last October, BCCCP's St. Louis Partnership for Breast and Cervical Cancer Awareness helped sponsor an unveiling ceremony for the US Postal Service's new breast cancer research stamp. As it did last year, the Mid-Missouri Partnership for Breast Cancer Awareness, with BCCCP participation, will open NBCAM in 1999 with a candlelight vigil in Columbia to honor local breast cancer victims.

BCCCP shares with the sponsors of NBCAM an emphasis on those women who are medically underserved. These are older women, poor women, often undereducated, and often women of color. Frequently they live in neighborhoods, both rural and urban, where medical services are not readily available. NBCAM sponsors have launched multicultural and, where necessary, bilingual initiatives to reach these women where they live. BCCCP media campaigns seek to reach the same groups in Missouri. Of the 48,000+ women BCCCP has served in its seven-year existence, 29 percent were age 50 or older, 33 percent did not finish high school, 24 percent were African-American, and 2 percent were of Hispanic descent. BCCCP providers have diagnosed 237 cases of breast cancer in these underserved populations.

Further information about the Breast and Cervical Cancer Control Project is available to callers at (573) 876-3273. Informaton on breast cancer is also available through the Department of Health Home Page at **http://www.health.state.mo.us/GLRequest/BreastCancer/BC.html**.

REFERENCES

American Cancer Society, Atlanta. Cancer Facts and Figures—1999

Holt BM, et al. Breast cancer incidence and mortality trends in Missouri. Mo Med 1998;95(4):165–69.

Global Climate Change

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Climate change: State of knowledge. October 1997. EPA236K97002.

4. Emerging Public Health Threats and the Role of Climate Change. A report on the March, 11-12, 1998 conference sponsored by the EPA Office of Policy, Planning and Evaluation, Office of Economy and Environment.
5. EPA Global Warming Site: In the News. **http://www.epa.gov/globalwarming/news/index.html**
6. Missouri Department of Health, Office of Epidemiology. Heat surveillance summary - 1998. Missouri Epidemiologist 1999:21(2);21–23. **http://www.health.state.mo.us/MoEpi/MOEPI212.htm#heatsurveillance**
7. Press Release. World Wildlife Fund (WWF). Health effects of global warming could be devastating, WWF report finds. November 5, 1998. **http://www.worldwildlife.org/new/news/pr173.htm**
8. CDC, U.S. Department of Health and Human Services. National Center for Environmental Health, 1997 Fact Book. August 1997. **http://www.cdc.gov/nceh/about/factbook/1997/cover/cover.htm**
9. CDC. Heat-related illnesses and deaths—Missouri, 1998, and United States, 1979–1996. MMWR 1999: 48(22);469–73. **http://www.cdc.gov/epo/mmwr/preview/mmwrhtml/mm4822a2.htm**

Guideline for Prevention of Surgical Site Infection, 1999

The recently released *Guideline for Prevention of Surgical Site Infection*, 1999 presents evidence-based recommendations for surgical site infection (SSI) prevention; provides an extensive review of the epidemiology, definitions, microbiology, pathogenesis, and surveillance of SSI; and provides a detailed discussion of the pre-, intra-, and post-operative issues relevant to SSI genesis.

The guideline and information about continuing education credit are available at **http://www.cdc.gov/ncidod/hip/**

HIV/AIDS in Missouri: 1998

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Office of Epidemiology

***NOTE:** HIV-infected persons who have been reported to the Missouri Department of Health (MDOH) are placed into one of two mutually exclusive categories: HIV cases and AIDS Cases. Together, these two groups of cases are referred to as HIV disease. An **AIDS case** is an individual in the later stages of HIV disease who meets the Centers for Disease Control and Prevention (CDC) surveillance case definition for AIDS. An **HIV case** is an individual in the earlier stages of HIV disease who has never met the CDC AIDS case definition. If an HIV case progresses in their disease process and meets the AIDS case definition, then he or she is reclassified as an AIDS case. HIV cases, in general, represent persons more recently infected with HIV; AIDS cases, in general, represent persons less recently infected (the average incubation for AIDS in the absence of effective antiretroviral treatment is approximately 8–10 years).*

From 1982 through 1998, a total of 7,894 AIDS cases have been reported in Missouri residents.* In 1998, 466 AIDS cases were reported; the corresponding rate** was 8.6 cases per 100,000 population (the U.S. AIDS rate for cases reported during 1998 was 17.1).

Of 7,894 AIDS cases reported through the end of 1998, 4,398 (55.7%) were known to have died, and 3,496 (44.3%) were living with AIDS. During 1998, 145 AIDS-related deaths in Missouri residents were reported on death certificates.

An additional 3,983 HIV cases have been reported in Missourians***; 486 HIV cases were reported in 1998. In sum, from 1982 through 1998, 11,877 Missourians with HIV disease (7,894 AIDS cases and 3,983 HIV cases) have been reported to MDOH.

Table 1 describes HIV and AIDS cases by gender, race/ethnicity, age at diagnosis, and exposure category, as well as geographic location.

Males continue to make up the majority of reported HIV and AIDS cases (78.0 percent of the 486 HIV cases and 84.5 percent of the 466 AIDS cases reported in 1998).

African Americans continue to be very disproportionately represented in the HIV/AIDS epidemic. Although African Americans make up only about 11 percent of Missouri's population, they accounted for 44.4 percent of HIV cases and 42.3 percent of AIDS cases reported in 1998. The rate for HIV cases reported in 1998 in African Americans (35.9) was 6.6 times the rate in whites (5.4). For Hispanics, the rates for HIV and AIDS cases reported in 1998 were approximately twice those seen in whites. However, the numbers of cases reported in Hispanics (9 HIV cases and 9 AIDS cases in 1998) have been small. Asians and American Indians each make up less than 0.5 percent of the total reported HIV and AIDS cases. In 1998, two HIV cases were reported in Asians; none were reported in American Indians. No AIDS cases were reported in persons from either of these groups in 1998.

Many new HIV infections in Missourians are occurring in persons in their twenties, and infections are also occurring in teenagers. Of HIV cases reported in 1998, 43.6 percent were diagnosed in 30–39 year olds (some of these individuals were initially infected in their twenties) and 29.8 percent in 20–29 year olds (some of these individuals were infected in their teens).

Among reported HIV cases, which generally represent persons more recently infected with HIV, the majority acquired their infection through male homosexual contact; the second largest number acquired their infection through heterosexual contact. Of the 480 adult/adolescent HIV cases reported in 1998: 275 (57.3%) were in men who have sex with men (MSM); 23 (4.8%) in men who have sex with men and inject drugs (MSM/IDUs); 25 (5.2%) in injecting drug users (IDUs); 79 (16.5%) in heterosexual contacts; and 75 (15.6%) are still being investigated and have not yet been placed in a specific exposure category.†

A total of 33 perinatal HIV cases and 42 perinatal AIDS cases have been reported with 6 perinatal HIV cases and 2 perinatal AIDS cases reported in 1998. (Perinatal cases are the result of HIV transmission from an infected mother to her infant before or at the time of birth.)

Table 2 provides information on 1998 HIV cases and rates by race/ethnicity and geographic area. In each area (St. Louis City and County, Kansas City, and Outstate Missouri), the HIV case rate in African Americans is noticeably higher than in whites.

Table 3 on page 30 summarizes reported HIV and AIDS cases and rates by geographic area. The highest rates of HIV and AIDS cases are in St. Louis City, followed by Kansas City, St. Louis County, and Outstate Missouri. Of the 486 HIV cases reported in Missouri residents in 1998:

- 123 (25.3%) were from St. Louis City; the rate was 36.0 cases per 100,000 population
- 70 (14.4%) were from St. Louis County; the rate was 7.0
- 120 (24.7%) were from Kansas City; the rate was 26.8
- 130 (26.7%) were from Outstate Missouri; the rate was 3.6

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* Does not include 273 AIDS cases diagnosed in persons residing in Federal correctional facilities in Missouri.
** All rates are per 100,000 population, using 1997 population estimates.
*** Does not include 100 HIV cases diagnosed in persons residing in Federal correctional facilities in Missouri.
† When this is done, most will be assigned to one of the four major exposure categories: MSM, MSM/IDU, IDU, or heterosexual contact.

Table 1. Summary of Reported HIV and AIDS Cases, Missouri, 1982–1998

	HIV Cases*				AIDS Cases**				HIV/AIDS Cases	
	Reported 1998		Cumulative*		Reported 1998		Cumulative		Cumulative	
	Case	%	Case	%	Case	%	Case	%	Case	%
Geographic Location										
Missouri	486	100.0%)	3,983	(100.0%)	466	(100.0%)	7,894	(100.0%)	11,877	(100.0%)
St. Louis City†	123	(25.3%)	1,179	(29.6%)	146	(31.3%)	2,169	(27.5%)	3,348	(28.2%)
St. Louis County†	70	(14.4%)	511	(12.8%)	68	(14.6%)	1,218	(15.4%)	1,729	(14.6%)
Kansas City†	120	(24.7%)	1,029	(25.8%)	112	(24.0%)	2,261	(28.6%)	3,290	(27.7%
Outstate†	130	(26.7%)	993	(24.9%)	121	(26.0%)	2,056	(26.0%)	3,049	(25.7%)
Missouri Correctional Facilities††	43	(8.8%)	271	(6.8%)	19	(4.1%)	190	(2.4%)	461	(3.9%)
Gender										
Male	379	(78.0 %)	3,349	(84.1%)	394	(84.5%)	7,221	(91.5%)	10,570	(89.0%)
Female	107	(22.0%)	634	(15.9%)	72	(15.5%)	673	(8.5%)	1,307	(11.0%)
Race/Ethnicity										
White	253	(52.1%)	2,143	(53.8%)	259	(55.6%)	5,346	(67.7%)	7,489	(63.1%)
Black	216	(44.4%)	1,702	(42.7%)	197	(42.3%)	2,347	(29.7%)	4,049	(34.1%)
Hispanic	9	(1.9%)	87	(2.2%)	9	(1.9%)	152	(1.9%)	239	(2.0%)
Asian/Pacific Islander	2	(0.4%)	13	(0.3%)	0	(0.0%)	17	(0.2%)	30	(0.3%)
American Indian	0	(0.0%)	11	(0.3%)	0	(0.0%)	30	(0.4%)	41	(0.3%)
Unknown	6	(1.2%)	27	(0.7%)	1	(0.2%)	2	(0.1%)	29	(0.2%)
Age at Diagnosis‡										
<13	6	(1.2%)	40	(1.0%)	2	(0.4%)	53	(0.7%)		
13-19	20	(4.1%)	187	(4.7%)	6	(1.3%)	77	(1.0%)		
20-29	145	(29.8%)	1,589	(39.9%)	84	(18.0%)	1,832	(23.2%)		
30-39	212	(43.6%)	1,518	(38.1%)	217	(46.6%)	3,615	(45.8%)		
40-49	82	(16.9%)	505	(12.7%)	111	(23.8%)	1,652	(20.9%)		
>49	21	(4.3%)	144	(3.6%)	46	(9.9%)	665	(8.4%)		
Exposure Category¶										
MSM	275	(56.6%)	2,431	(61.0%)	290	(62.2%)	5,659	(71.7%)	8,090	(68.1%)
MSM/IDU	23	(4.7%)	260	(6.5%)	32	(6.9%)	712	(9.0%)	972	(8.2%)
IDU	25	(5.1%)	389	(9.8%)	40	(8.6%)	560	(7.1%)	949	(8.0%)
Heterosexual Contact	79	(16.3%)	554	(13.9%)	53	(11.4%)	550	(7.0%)	1,104	(9.3%)
Adult Hemophiliac	3	(0.6%)	30	(0.7%)	0	(0.0%)	142	(1.8%)	172	(1.4%)
Adult Transfusion	0	(0.0%)	14	(0.4%)	2	(0.4%)	94	(1.2%)	108	(0.9%)
Other/Unknown Adult	75	(15.4%)	265	(6.7%)	47	(10.1%)	115	(1.5%)	380	(3.2%)
Perinatal Transmission	6	(1.2%)	33	(0.8%)	2	(0.4%)	42	(0.5%)	75	(0.6%)
Other/Unknown Pediatric	0	(0.0%)	7	(0.2%)	0	(0.0%)	20	(0.3%)	27	(0.2%)
Missouri Total	**486**	**(100.0%)**	**3,983**	**(100.0%)**	**466**	**(100.0%)**	**7,894**	**(100.0%)**	**11,877**	**(100.0%)**

*HIV Cases-Persons with HIV infection who have not developed one of the specific diseases or conditions which would cause them to meet the case definition for AIDS.

**AIDS Cases-Persons with HIV infection who have developed one or more of the specific diseases or conditions which cause them to meet the AIDS case definition.

†Does not include persons living in correctional facilities at the time of diagnosis.

††Includes state, county and local correctional facilities.

‡For HIV Cases, Age at Diagnosis is the age at which the individual was first diagnosed with HIV infection. For AIDS Cases, Age at Diagnosis is the age at which the individual was first diagnosed with AIDS.

¶ MSM=men who have sex with men; MSM/IDU=men who have sex with men and inject drugs; IDU=injecting drug users

Table 2. Reported HIV Cases and Rates by Race/Ethnicity and Geographic Area, Missouri, 1998

	TOTAL		WHITE, NON-HISPANIC		BLACK, NON-HISPANIC		HISPANIC	
	CASES	RATE*	CASES	RATE*	CASES	RATE*	CASES	RATE*
ST LOUIS CITY	12	36.	46	29.	77	43.	0	0.0
ST LOUIS CO	70	7.0	40	5.0	29	17.	1	7.9
KANSAS CITY	12	26.	60	21.	54	41.	5	26.
OUTSTATE TOTAL	13	3.6	96	2.8	24	18.	3	6.6
MO CORRECTIONAL FACILITIES**	43	----	11	----	32	----	0	----
MISSOURI	**48**	**9.0**	**25**	**5.4**	**21**	**35.**	**9**	**11.**

*Per 100,000 population, based on 1997 population estimates.

**Includes state, county, and local correctional facilities.

Table 3. Summary of Reported HIV and AIDS Cases, Missouri, 1982–1998

Geographic Area	HIV Cases* Reported 1998 Case	%	Rate***	HIV Cases* Cumulative Case	%	AIDS Cases** Reported 1998 Case	%	Rate***	AIDS Cases** Cumulative Case	%
Location										
St. Louis City†	123	(25.3%)	36.0	1,179	(29.6%)	146	(31.3%)	42.7	2,169	(27.5%)
St. Louis County†	70	(14.4%)	7.0	511	(12.8%)	68	(14.6%)	6.8	1,218	(15.4%)
Kansas City†	120	(24.7%)	26.8	1,029	(25.8%)	112	(24.0%)	25.0	2,261	(28.6%)
Outstate†	130	(26.7%)	3.6	993	(24.9%)	121	(26.0%)	3.4	2,056	(26.0%)
Missouri Correctional Facilities††	43	(8.8%)	--	271	(6.8%)	19	(4.1%)	--	190	(2.4%)
Community Planning Regions										
St. Louis†	200	(41.2%)	12.4	1,751	(44.0%)	219	(47.0%)	13.6	3,520	(44.6%)
Kansas City†	138	(28.4%)	13.5	1,208	(30.3%)	136	(29.2%)	13.3	2,711	(34.3%)
Northwest†	6	(1.2%)	2.4	61	(1.5%)	2	(0.4%)	0.8	137	(1.7%)
Northeast†	2	(0.4%)	0.8	28	(0.7%)	5	(1.1%)	2.0	68	(0.9%)
Central†	28	(5.8%)	2.9	232	(5.8%)	39	(8.4%)	4.0	491	(6.2%)
Southwest†	43	(8.8%)	5.7	291	(7.3%)	34	(7.3%)	4.5	538	(6.8%)
Southeast†	26	(5.3%)	4.8	141	(3.5%)	12	(2.6%)	2.2	239	(3.0%)
Missouri Correctional Facilities††	43	(8.8%)	---	271	(6.8%)	19	(4.1%)	---	190	(2.4%)
Missouri Total	**486**	**(100.0%)**	**9.0**	**3,983**	**(100.0%)**	**466**	**(100.0%)**	**8.6**	**7,894**	**(100.0%)**

*HIV Cases-Persons with HIV infection who have not developed one of the specific diseases or conditions which would cause them to meet the case definition for AIDS.
**AIDS Cases-Persons with HIV infection who have developed one or more of the specific diseases or conditions which cause them to meet the AIDS case definition.
***Per 100,000 population, based on 1997 population estimates.
†Does not include persons living in correctional facilities at the time of diagnosis.
††Includes state, county and local correctional facilities.

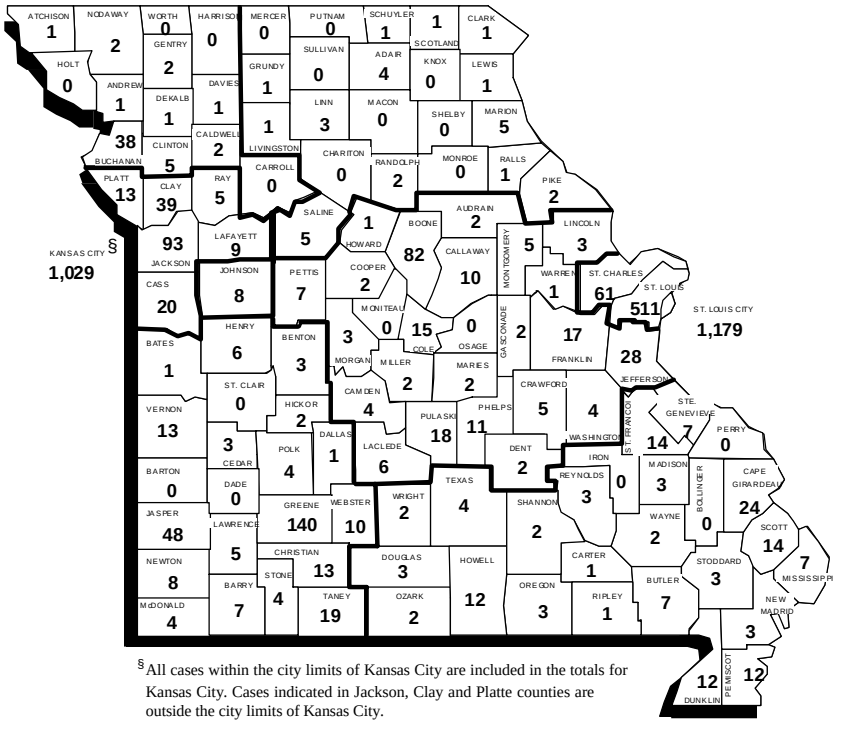
(continued from page 28)

- 43 (8.8%) were in persons living in Missouri correctional facilities at the time of diagnosis

Of the 466 AIDS cases reported in Missouri residents in 1998:

- 146 (31.3%) were from St. Louis City; the rate was 42.7 cases per 100,000 population
- 68 (14.6%) were from St. Louis County; the rate was 6.8
- 112 (24.0%) were from Kansas City; the rate was 25.0
- 121 (26.0%) were from Outstate Missouri; the rate was 3.4
- 19 (4.1%) were in persons living in Missouri correctional facilities at the time of diagnosis

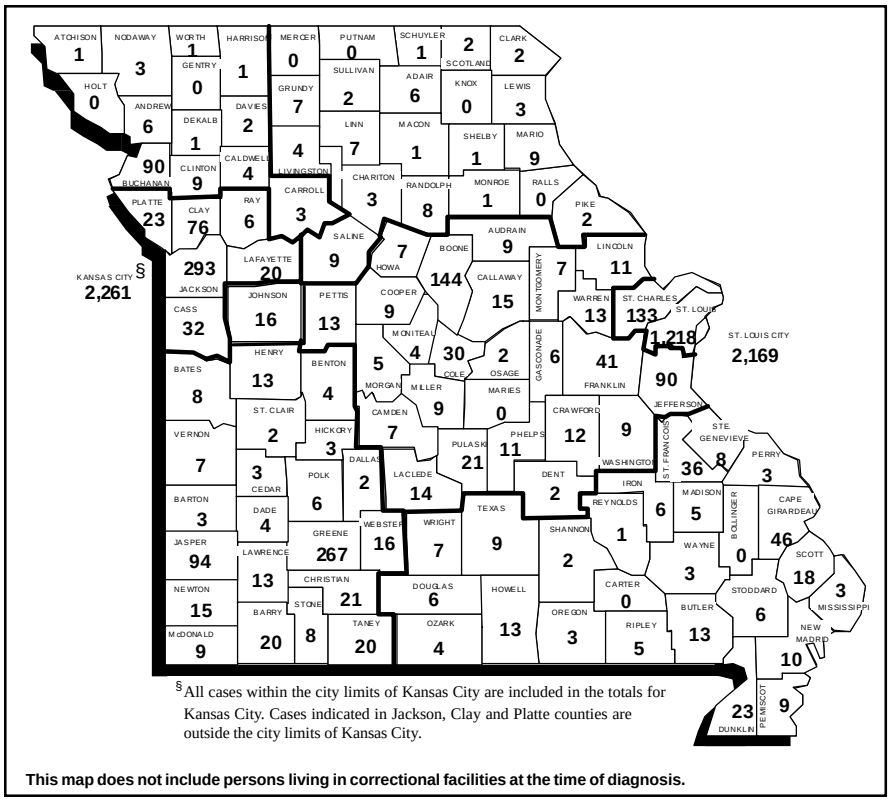
Figures 1 and 2 show cumulative HIV and AIDS cases by county. At least one HIV case has been reported from 94 (82.5%) of Missouri's 114 counties. At



§All cases within the city limits of Kansas City are included in the totals for Kansas City. Cases indicated in Jackson, Clay and Platte counties are outside the city limits of Kansas City.

This map does not include persons living in correctional facilities at the time of diagnosis.

Figure 1. Reported HIV cases by county, Missouri, cumulative through 1998.



§ All cases within the city limits of Kansas City are included in the totals for Kansas City. Cases indicated in Jackson, Clay and Platte counties are outside the city limits of Kansas City.

This map does not include persons living in correctional facilities at the time of diagnosis.

Figure 2. Reported AIDS cases by county, Missouri, cumulative through 1998.

least one AIDS case has been reported from 105 (92.1%) of the state's 114 counties. Only five (4.4%) Missouri counties have not reported any HIV or AIDS cases.

The following describe apparent trends in the HIV/AIDS epidemic in Missouri. Such trends may provide indications of the future course of the epidemic, as well as indications of which groups are increasingly becoming affected.

- The 466 AIDS cases reported in Missouri residents in 1998 represented a 2.7 percent decrease from the 479 cases reported in 1997. See Figure 3. This decrease is much smaller than the 41.2 percent decrease in reported AIDS cases from 1996 to 1997. The large decline in reported cases from 1996 to 1997 was believed to be largely due to improvements in the care and treatment of HIV-infected persons, especially the use of combination antiretroviral therapy. Failure of antiretroviral therapy does, however, occur, and the much smaller decline in the number of AIDS cases reported in 1998 may in part reflect the occurrence of such treatment failure in a number of persons.
- The 145 AIDS-related deaths in Missouri residents reported on death certificates during 1998 represented an 11.0 percent decrease from the 163 deaths reported in 1997. This decrease is much smaller than the 51.9 percent decrease in AIDS-related deaths from 1996 to 1997. The explanation for this smaller decline in such deaths in 1998 may also in part reflect the occurrence of treatment failures.
- Despite the occurrence of treatment failures, combination antiretroviral therapy has been successful in many persons, resulting in marked reductions in morbidity and mortality. This appears to be reflected in the 8.1 percent increase in the number of persons living with AIDS (AIDS prevalence) at the end of 1998 (3,496)

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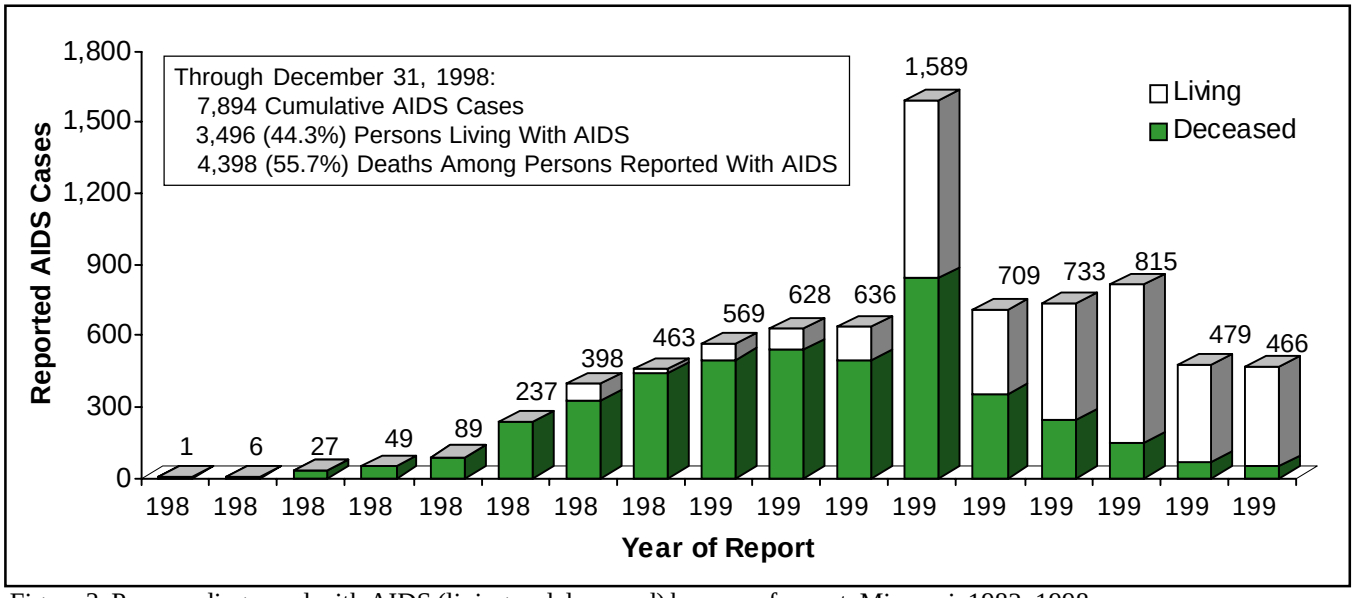


Figure 3. Persons diagnosed with AIDS (living and deceased) by year of report, Missouri, 1982–1998.

(continued from page 31)

compared to the number living with AIDS at the end of 1997 (3,235).

- Although men continue to make up the largest numbers of reported cases, women are being increasingly affected by the HIV/AIDS epidemic.
  - –Since the mid-1980's, women have generally been making up a larger proportion of annually reported AIDS cases. Of AIDS cases reported in 1998, 15.5 percent were in females. By comparison, of AIDS cases reported five years previously (in 1993), only 8.3 percent were in females.
  - –A higher proportion of HIV cases, compared to AIDS cases, tend to be female, providing evidence that among more recently infected persons a larger proportion are female. In 1998, 15.5 percent of reported AIDS cases were female; by comparison, 22.0 percent of reported HIV cases were female (see Table 1 on page 29).
  - –When, as shown in Figure 4, reported HIV cases[¶] are examined by gender and year of diagnosis,[¶¶] it can be seen that the annual number of diagnosed cases in females has generally been slowly increasing in recent years, whereas diagnosed cases in males have been decreasing (See also the discussion below on the use of trend data for reported HIV cases). Not shown in this figure is the fact that the upward trend in females is most evident among African American females.
- Although it seems highly likely that the largest number of new HIV infections continue to result from male homosexual contact, it also appears that increasing numbers of persons are being infected through heterosexual contact.

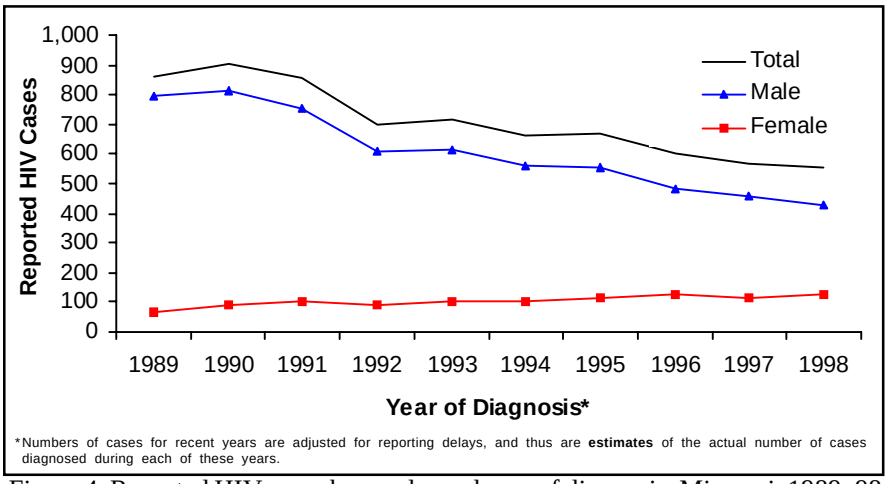


Figure 4. Reported HIV cases by gender and year of diagnosis, Missouri, 1989–98.

  - –Heterosexual contacts have, since the mid-1980's, generally been making up a larger proportion of annually reported AIDS cases. For AIDS cases reported in 1998, it is estimated that eventually almost 14 percent will be placed in the heterosexual contact exposure category (once those whose risk status is currently unknown are reassigned, after further investigation, to a specific exposure category). Five years previously (in 1993), heterosexual contacts made up only approximately 6.5 percent of reported AIDS cases).
  - –A higher proportion of HIV cases, compared to AIDS cases, tend to be heterosexual contacts, providing evidence that among more recently infected persons a larger proportion have acquired their infection through heterosexual contact. In 1998, 11.4 percent of reported AIDS cases whose risk category is known at this time were in heterosexual contacts, compared to 16.3 percent of reported HIV cases (see Table 1 on page 29).
  - –When reported HIV cases are examined by exposure category and year of diagnosis, it can be seen that the annual number of diagnosed cases in heterosexual contacts has generally been increasing in recent years (Figure 5; see also the discussion in the next section on the use of trend data for reported HIV cases). Not shown in this figure is the fact that the upward trend in heterosexual contact cases is most evident among African American females.
- A potentially useful way to examine the current direction of the HIV disease epidemic is to look at trends in reported HIV cases by year of diagnosis. This approach can be particularly helpful because HIV cases are persons diagnosed with HIV infection who have not progressed to AIDS, and so are generally closer to the time of initial infection than are persons with AIDS. Examining changes in reported HIV cases over time thus has the potential to provide a general estimate of current trends in new HIV infections in the population(s) being considered.[††]
  - –Figure 4 shows reported HIV cases by gender and year of diagnosis. For total HIV cases and male HIV cases, the annual numbers of diagnosed

[¶] The HIV cases shown in Figures 4–8 represent individuals who were HIV cases (i.e., HIV infected but **not** AIDS) **at the time of initial diagnosis of HIV infection**. Some of these individuals have subsequently progressed to AIDS, while the rest currently remain HIV cases. However, in these figures, where the emphasis is on status at the time of initial diagnosis, all are considered HIV cases. (This is in contrast to the data in Table 1. In this table, once an individual who is an HIV case meets the case definition for AIDS, he or she is no longer counted as an HIV case, and instead is counted as an AIDS case.)

[¶¶] Adjustments were made for delays in reporting of cases. That is, for more recent years, not all cases diagnosed during these years have been reported as yet. To adjust for this, estimates were made, based on past experience, of the additional number of cases expected to ultimately be reported, and these expected cases were added to those already reported to give the estimated total number of cases for a given year as shown in the figure.

[††] This approach does have potential limitations. For many reported HIV cases, initial diagnosis of infection did not occur until several years after initial infection, so at best the trends in reported HIV cases can only approximate current trends in new HIV infections. In addition, to be diagnosed as an HIV case, the individual must first have been tested for HIV. Because members of certain subpopulations may be more, or less, likely to be tested, different subpopulations could be over- or under-represented among reported HIV cases. Also, if changes in testing behavior among at-risk persons have occurred over time, this could lead to an increase, or decrease, in the numbers of cases diagnosed and reported.

cases have been decreasing, although the rate of decrease has slowed in recent years. In females, the annual number of diagnosed cases has generally been slowly increasing in recent years.

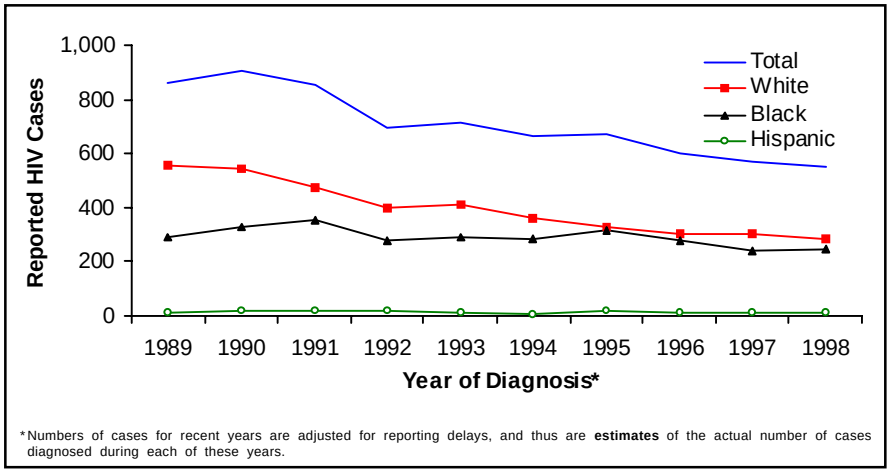
– Figure 5 shows reported HIV cases by race/ethnicity and year of diagnosis. For whites, the annual number of diagnosed cases has been generally decreasing, although the rate of decrease has slowed in recent years. For African Americans, the annual number of diagnosed cases has, since 1991, shown an overall decrease, although this decrease has been smaller and less consistent than that seen in whites.

– Figure 6 shows reported HIV cases by year of diagnosis for white males and females, and African American males and females. For white and African American males, the annual numbers of diagnosed cases have been generally decreasing. For white females, the annual number of diagnosed cases has remained generally stable. For African American females, the annual number of diagnosed cases increased slowly from 1992 through 1996, and then essentially plateaued the past two years.

– Figure 7 shows reported HIV cases by selected exposure categories and year of diagnosis. For HIV cases reported in MSMs, MSM/IDUs, and IDUs, the annual numbers of diagnosed cases have been generally decreasing. The annual number of diagnosed cases in heterosexual contacts has generally been increasing.

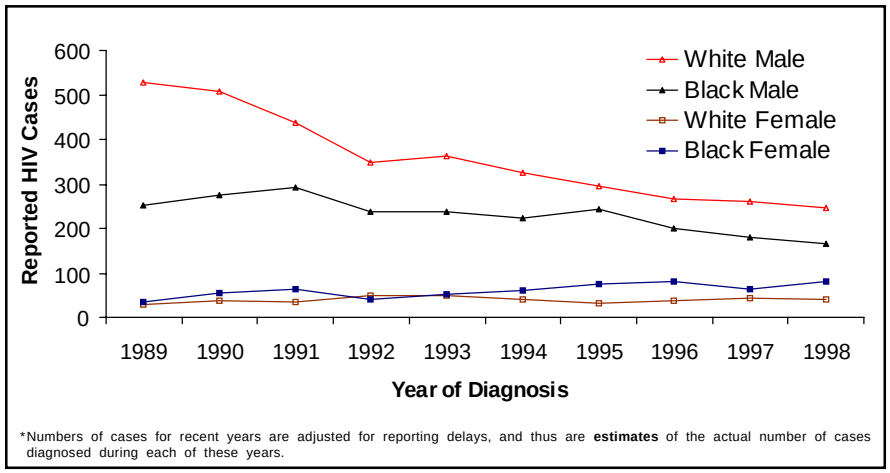
– Figure 8 on page 34 shows reported HIV cases by community planning group (CPG) region and year of diagnosis. The annual number of diagnosed cases from the St. Louis Planning Region has generally been decreasing. Reported cases from the Kansas City Planning Region have generally plateaued in recent years. The annual numbers of diagnosed cases from the other planning regions

(continued on page 34)



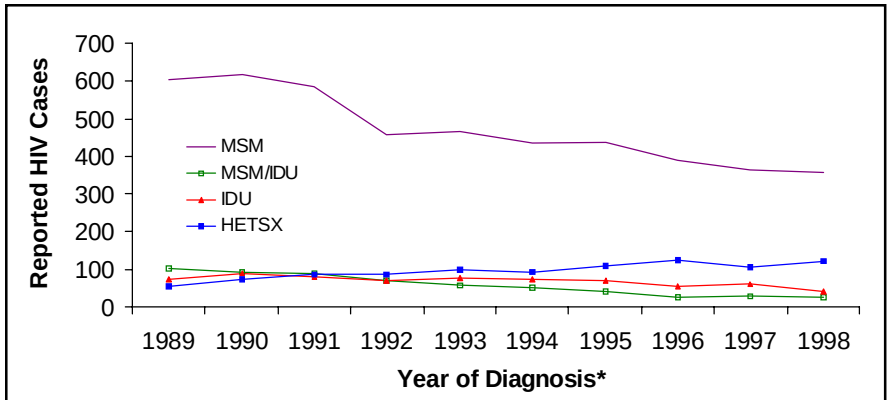
*Numbers of cases for recent years are adjusted for reporting delays, and thus are **estimates** of the actual number of cases diagnosed during each of these years.

Figure 5. Reported HIV cases by race/ethnicity and year of diagnosis, Missouri, 1989–98.



*Numbers of cases for recent years are adjusted for reporting delays, and thus are **estimates** of the actual number of cases diagnosed during each of these years.

Figure 6. Reported HIV cases by race/ethnicity, gender and year of diagnosis, Missouri, 1989–98.



* Numbers of cases for recent years are adjusted for reporting delays, and thus are **estimates** of the actual number of cases diagnosed during each of these years.

Cases currently classified as "Other/Unknown Adult," many of which are still under investigation, have been assigned to a specific exposure category in order to more clearly depict trends in reported HIV/AIDS cases. The proportion of Other/Unknown Adult cases assigned to a given exposure category is based on past experience with Other/Unknown Adult cases whose exposure risk has been determined following investigation. Such experience indicates that almost all Other/Unknown Adult cases whose expsosure risk is eventually determined will be placed in one of four exposure categories: men who have sex with men, men who have sex with men and inject drugs, injecting drug use, or heterosexual contact.

Figure 7. Reported HIV cases by selected exposure categories and year of diagnosis, Missouri, 1989–98.

(continued from page 33)

have been smaller, and have not shown noticeable upward or downward trends in recent years.

The overall trend in reported HIV cases has been downward. This could be due, at least in part, to a decrease in the number of new HIV infections (HIV incidence) in recent years. It could also potentially reflect other factors, such as possible changes in testing behaviors among at-risk populations. Of concern is the fact that, for certain subpopulations (African-American females and heterosexual contacts), the annual number of diagnosed HIV cases has generally been increasing.

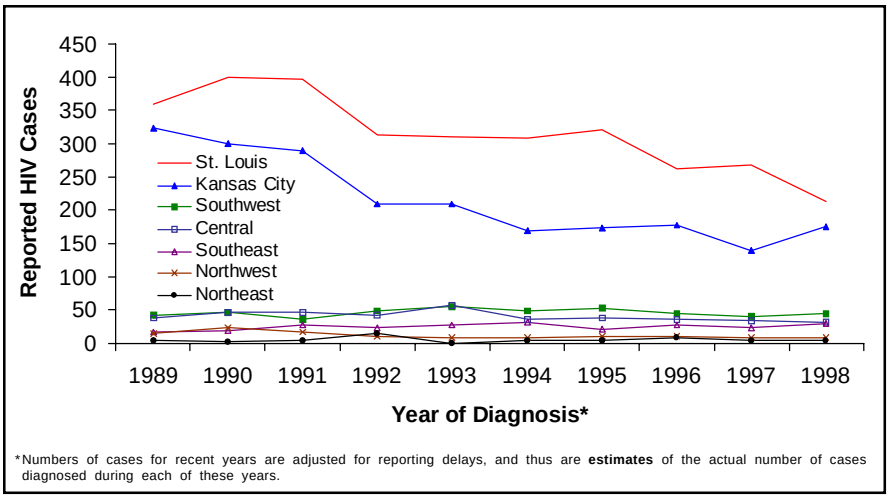


Figure 8. Reported HIV cases by community planning region and year of diagnosis, Missouri, 1989–98.

Comment:

From 1982 through 1998, 11,877 HIV-infected Missourians (7,894 AIDS cases and 3,983 HIV cases) have been reported to MDOH. Males and whites continue to make up the largest numbers of reported cases. However, females are becoming increasingly affected by the epidemic, and African Americans continue to be very disproportionately represented among reported HIV and AIDS cases. While the majority of reported HIV and AIDS cases continue to be in men who acquired their infection through male homosexual contact, the number of heterosexual contact cases has been increasing.

The largest numbers of HIV and AIDS cases, and the highest case rates, are in the state's two major metropolitan areas. However, HIV infection is also occurring in persons living in rural areas, and HIV and AIDS cases have been reported from most counties in the state.

Numbers of reported AIDS cases showed a substantial decline from 1996 to 1997; however, only a very small decrease was seen in reported cases from 1997 to 1998. Similarly, while the number of AIDS-related deaths dropped markedly from 1996 to 1997, the decline from 1997 to 1998 was much smaller. On the other hand, the number of persons living with AIDS increased from 1997 to 1998. Taken together these trends appear to reflect, at least in part, the successes and failures of the newer therapies for HIV disease.

An accurate understanding of trends in HIV incidence has been difficult to obtain. One approach to this problem is to examine HIV cases (which represent persons more recently infected) by year of diagnosis. When this is done for HIV cases reported in Missouri, it is apparent that the overall trend has been generally downward in recent years. This may, as stated above, be at least partially due to an actual decrease in the number of new HIV infections in recent years. It may also, however, be due at least in part to other factors, such as possible changes in testing behaviors among persons at-risk for HIV infection. But regardless of the cause or causes for the overall downward trend, the fact that the annual numbers of diagnosed HIV cases in females (particularly African American females) and heterosexual contacts have been increasing is an apparent indication of a growing problem in these subpopulations.

The HIV/AIDS epidemic continues to be a very significant problem in Missouri. Even if the overall number of new HIV infections is decreasing, and there is not yet sufficient information to allow this conclusion to be stated with certainty, there continue to be significant numbers of persons becoming infected. In addition, it appears that at least for some subpopulations, the number of new infections is actually increasing.

The presently available antiretroviral therapies have provided very substantial benefit to many infected persons by slowing the progression from the earlier stages of HIV disease to AIDS, and from AIDS to death. However, these therapies are not a cure, and are associated with many problems such as adherence, adverse reactions, development of resistance, treatment failure, and cost. *Emphasis must continue to be placed on prevention of new infections.*

- Medical providers should routinely conduct appropriate risk assessments on their patients, provide counseling and any necessary referrals for those who are at risk for HIV infection, and strongly encourage all at-risk persons to be tested for HIV.
- All pregnant women should receive counseling/education regarding HIV infection and be encouraged to undergo voluntary HIV testing.[1,2,3] Those found to be infected should be offered treatment according to current guidelines.[4] Such treatment should be provided by, or in consultation with, a physician who has expertise in the treatment of HIV-infected pregnant women.
- All medical facilities, including clinics and physicians' offices, should have written protocols for managing occupational exposures to HIV (and

other bloodborne pathogens). These protocols should be periodically updated to remain consistent with current guidelines.[5,6,7]

- Medical providers should be aware of management options, and current recommendations,[8] for situations in which individuals have non-occupational (sexual or injecting-drug–use) exposure to HIV.
- Medical providers should promptly report, as required by Missouri law, all cases of HIV infection/AIDS to public health officials. Providers in St. Louis City and St. Louis County should report cases to the St. Louis City Department of Health and Hospitals at (314) 658-1159. Providers in the five-county Kansas City metropolitan area should report to the Kansas City Health Department at (816) 983-4200. All other providers should report to MDOH's Office of Surveillance at (573) 751-6463.
- Medical providers should also be aware of current guidelines[9] for the screening, diagnosis, and treatment of sexually transmitted diseases (STDs) such as chlamydia, gonorrhea, syphilis, and trichomoniasis. The presence of these conditions is known to increase HIV infectivity and HIV susceptibility, and the early detection and treatment of curable STDs should be a major component of HIV prevention programs.[10]
- Ongoing efforts are needed to help at-risk persons modify those behaviors which can result in the transmission of HIV. Families, schools, churches, health care providers, and community-based organizations, as well as public health agencies, all need to be involved in this task.
- Finally, prevention activities should be based on a thorough understanding of:
  1) the epidemiology of the HIV/AIDS epidemic in one's geographic area[11], and
  2) which prevention efforts are likely to have success in the population(s) being targeted. (More information on HIV prevention can be obtained by contacting the Section of STD/HIV/AIDS Prevention and Care Services at (573) 751-6144.

REFERENCES:

1. Joint Statement of the American Academy of Pediatrics and the American College of Obstetricians and Gynecologists. Testing for HIV; February, 1997. **http://www.aap.org/policy/rex036.html**
2. CDC. U.S. Public Health Service recommendations for human immunodeficiency virus counseling and voluntary testing for pregnant women. MMWR 1995;44(No. RR-7). **http://www.cdc.gov/epo/mmwr/preview/ind95_rr.html**
3. Missouri Department of Health Policy to Reduce the Risk of Perinatal HIV Transmission in Missouri. Missouri Epidemiologist 1996; 18(2):1–4. **http://www.health.state.mo.us/MoEpi/MoEpi.html**
4. CDC. Public Health Service task force recommendations for the use of antiretroviral drugs in pregnant women infected with HIV-1 for maternal health and for reducing perinatal HIV-1 transmission in the United States. MMWR 1998;47(No. RR-2). **http://www.hivatis.org./trtgdlns.html**
5. CDC. Public Health Service guidelines for the management of health-care worker exposures to HIV and recommendations for postexposure prophylaxis. MMWR 1998;47:(No. RR-7). **http://www.hivatis.org./trtgdlns.html**
6. CDC. Immunization of health-care workers: Recommendations of the Advisory Committee on Immunization Practices (ACIP) and the Hospital Infection Control Practices Advisory Committee (HICPAC). MMWR 1997; 46(No. RR-18). **http://www.cdc.gov/epo/mmwr/preview/ind97_rr.html**
7. CDC. Recommendations for prevention and control of hepatitis C virus (HCV) infection and HCV-related chronic disease. MMWR 1998;47 (No. RR-19). **http://www.cdc.gov/epo/mmwr/preview/ind98_rr.html**
8. CDC. Management of possible sexual, injecting-drug-use, or other nonoccupational exposure to HIV, including considerations related to antiretroviral therapy. Public Health Service Statement. MMWR 1998; 47 (No. RR-17). **http://www.hivatis.org./trtgdlns.html**
9. CDC. 1998 Guidelines for treatment of sexually transmitted diseases. MMWR 1998;47(No. RR-1). **http://www.cdc.gov/epo/mmwr/preview/ind98_rr.html**
10. CDC. HIV prevention through early detection and treatment of other sexually transmitted diseases—United States. MMWR 1998;47(No. RR-12). **http://www.cdc.gov/epo/mmwr/preview/ind98_rr.html**
11. MDOH Home Page. HIV/AIDS: Scientific Studies and Reports. **http://www.health.state.mo.us/GLRequest/ID/SSRHIVAIDS.html**

HIV/AIDS educational opportunities for medical professionals are available through Midwest AIDS Training and Education Center (MATEC) sites in St. Louis and Kansas City. For more information, contact:

MATEC—Eastern Missouri at (314) 362-2418 or (800) 432-0448
FAX (314) 362-4857
http://www.id.wustl.edu/~actu

MATEC—Western Missouri at (816) 756-5116, FAX (816) 756-5121
http://www.kcarc.org/education.htm

A number of links to HIV/AIDS-related sites on the World Wide Web are available on the Missouri Department of Health Home Page at: **http://www.health.state.mo.us/GLRequest/ID/LinksHIVAIDS.html**.

1998 Outbreaks of Communicable Disease*

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Section of Communicable Disease Control and Veterinary Public Health

Unraveling the source of an outbreak requires collaborative interaction between personnel in various roles and work settings. Depending upon the complexity of an outbreak, interaction may involve federal, state, local and facility-based personnel. These persons function as a team and each plays an integral part in resolving an outbreak or cluster. The Section of Communicable Disease Control and Veterinary Public Health is grateful for the assistance of persons statewide who contribute time, concerted effort and expertise helping to protect Missouri citizens from infectious diseases.

In 1998, 36 communicable disease outbreaks occurring within communities were reported in Missouri. These 36 outbreaks involved 2,514 people and represent an increase of 16 percent from the 31 outbreaks reported in 1997. These outbreaks involved different modes of transmission and widely varying etiologic agents in a number of different settings. See Table 1.

Schools were the most common setting for outbreaks in 1998, accounting for nine (25%) of the 36 reported outbreaks. The largest of the outbreaks involved influenza A in one school district affecting 1,000 students. Interestingly, the 25 percent absenteeism rate, needed for school closure, was not met and within four days attendance rates returned to normal.

The largest category of outbreaks reported during 1998 was acute gastrointestinal illness (AGI) of unknown etiology (14 outbreaks affecting 416 people). Foodborne transmission was responsible for 12 (86%) of the 14 outbreaks occurring in varied settings.

Table 1. Community disease outbreaks by cause, setting and number of cases, Missouri, 1998.

Disease/ Mode of Transmission	No. of Outbreaks	Setting	No. of Cases
Acute Gastrointestinal Illness of Unknown Etiology/			
Foodborne	12	2C, CP, 2FG, H, O, OT, 2R, 2S	338
Person-to-Person	2	O,S	78
Campylobacter/Waterborne	1	G	20
Fifth Disease/Person-to-Person	3	2CC, S	25
Influenza A (culture confirmed)/			
Person-to-Person	4	G, I, 2S	1,406
Influenza-Like Illness/			
Person-to-Person	2	H,I	290
Leptospirosis/			
Waterborne	1	O	2
Other	1	S	19
Meningitis, Aseptic (Viral)/			
Person-to-Person	1	G	219
Pseudomonas/Waterborne	1	H	10
Salmonellosis/Foodborne	2	2G	66
Scabies/Person-to-Person	1	S	3
Shigellosis/			
Foodborne	1	O	25
Person-to-Person	2	CC, FG	9
Staphylococcus aureus/Waterborne	1	G	4
Strep Grp A (sore throats)/			
Person-to-Person	1	S	Unknown
TOTAL	**36**		**2,514**

Key:

C =Catered Event	**I** =Institution
CC =Child Care	**O** =Occupational
CP =Camp	**OT** =Other
FG =Family Gathering	**P** =Prison or Other Correctional Facility
G =General Community	**R** =Restaurant
H =Hotel	**S** =School

Salmonella species caused two of the foodborne outbreaks that affected a total of 66 people in Missouri. One outbreak, involving 34 people, was caused by *S. agona* linked to one brand of plain toasted oats cereal which caused over 200 cases of illness in at least 11 states. The second outbreak caused by *S. poona*

* Does not include outbreaks related to sexually transmitted diseases, tuberculosis, vaccine-preventable diseases or zoonotic diseases.

affected 32 people. Initially, the relationship between cases was not recognized because cases spanned multiple counties and even the state line. Sophisticated testing with Pulsed Field Gel Electrophoresis (PFGE), newly obtained and used by the State Public Health Laboratory, determined that all isolates were genetically identical and epidemiological study was needed. A food source was suspected, but due to the length of time between onset of illness and date of interviews, a common food source was never identified.

Shigellosis was diagnosed in three outbreaks affecting 34 people. One outbreak caused by *Sh. sonnei*, suspected to have been transmitted via food, affected 25 persons and occurred in a congregate living facility. Sanitary conditions at the facility were found satisfactory with no illness among foodhandlers noted. Interim control measures (strict compliance with handwashing, separating the ill from the non-ill, sanitizing equipment and shared items) were effective in halting the outbreak.

Three waterborne outbreaks occurred in 1998. One outbreak resulted when 10 of 11 attendees at a birthday party used the hotel hot tub. Within 48 hours all ten developed a rash clinically diagnosed as *Pseudomonas* folliculitis. The hot tub was drained before a water sample could be obtained for culture. One outbreak involved a fast food establishment where an ice maker and ice storage bin were found contaminated with *Staphylococcus aureus* resulting in four persons becoming ill. The other outbreak, *Campylobacter enteritis*, affected 20 persons residing in a small subdivision with water supplied by a well contaminated due to a broken sewage pipe.

A high incidence (219 cases) of viral (aseptic) meningitis occurred in St. Charles and St. Louis counties during June–August of 1998. Statewide, 319 cases of viral meningitis were reported. This is an increase of 320 percent over the 99 cases reported statewide in 1997.

Table 2. Nosocomial disease outbreaks by cause and number of cases, Missouri, 1998.

Disease/ Mode of Transmission	No. of Outbreaks	No. of Cases
Acute Gastrointestinal Illness of Unknown Etiology/		
Person-to-Person	5	129
Other	1	26
Acute Lower Respiratory Illness of Unknown Etiology/Person-to-Person	8	107
Eye Injury/Chemical	1	6
Influenza-Like Illness/Person-to-Person	4	206
Influenza A/Person-to-Person	5	136
Methicillin-Resistant *Staphylococcus aureus* (MRSA)/Person-to-Person	2	8
Pediculosis/Person-to-Person	1	5
Salmonellosis/Person-to-Person	1	3
Scabies/Person-to-Person	14	248
Serratia marcescens/Person-to-Person	1	11
Streptococcus salivarius meningitis/ Medical Procedure	1	2
Upper Respiratory Infection of Unknown Etiology/Person-to-Person	1	45
TOTAL	**45**	**941**

1998 Nosocomial Outbreaks

Hospitals, nursing homes, and other health care facilities or institutions in Missouri reported 45 health care-associated (nosocomial) disease outbreaks in 1998 as compared to 33 nosocomial outbreaks during 1997. Altogether, 941 cases of illness were reported. This is an increase of 27 percent from the 33 outbreaks (686 cases) reported in 1997. In 42 (93%) of the 45 outbreaks, transmission of disease was person-to-person. Table 2 categorizes these outbreaks by cause and number of cases.

Two Methicillin-Resistant *Staphyloccocus aureus* (MRSA) outbreaks involved infections of the eyes. Strict attention to handwashing and the cohorting of infected persons were effective in stopping further spread of MRSA. A common source (medication or staff member) was not identified in either outbreak.

A meningitis outbreak caused by *Streptococcus salivarius* involving two persons was related to radiographic myelogram procedures. As identified in other studies, the practice of wearing masks during the procedure can prevent such infections.

An outbreak involving corneal endothelial decompensation (eye injury) in six persons was related to adverse effects of one or more chemicals directly related to the use of the Abtox Plazlyte Sterilization system. This outbreak investigation resulted in Abtox conducting a nationwide field correction of the device to include revised labeling contraindicating the use of the Abtox Plazlyte Sterilization system for ophthalmic instruments.

1999–2000 Recommendations for the Use of Influenza Vaccine

The following is a summary of current recommendations on influenza vaccine from the Advisory Committee on Immunization Practices (ACIP). The complete ACIP statement was published in *Morbidity and Mortality Weekly Report (MMWR) Recommendations and Reports*, April 30, 1999, Vol. 48, No. RR-4. The full text of the ACIP recommendations is also available at **http://www2.cdc.gov/mmwr/mmwr_rr.html**. If you have questions regarding the recommendations, please contact the Section of Vaccine-Preventable and Tuberculosis Disease Elimination at (800) 699-2313.

Influenza vaccine is strongly recommended for any person aged 6 months or older who—because of age or underlying medical condition—is at increased risk for complications of influenza. In addition, health-care workers and others (including household members) in close contact with persons in high-risk groups should be vaccinated to decrease the risk of transmitting infection to persons at high risk. Influenza vaccine also can be administered to any person aged 6 months or older who wishes to reduce the chance of becoming infected with influenza.

The trivalent influenza vaccine prepared for the 1999–2000 season will include A/Beijing/262/95-like (H1N1), A/Sydney/5/97-like (H3N2), and B/Beijing/184/93-like hemagglutinin antigens. For the B/Beijing/184/93-like antigen, U.S. manufacturers will use the antigenically equivalent B/Yamanashi/166/98 virus because of its growth properties and because it is representative of currently circulating B viruses.

Target Groups for Vaccination

Persons at High Risk for Influenza-Related Complications

Vaccination is recommended for the following groups of persons who are at increased risk for complications from influenza:

- persons aged 65 years and older;
- residents of nursing homes and other chronic-care facilities that house persons of any age who have chronic medical conditions;
- adults and children who have chronic disorders of the pulmonary or cardiovascular systems, including asthma;
- adults and children who have required regular medical follow-up or hospitalization during the preceding year because of chronic metabolic diseases (including diabetes mellitus), renal dysfunction, hemoglobinopathies, or immunosuppression (including immunosuppression caused by medications);
- children and teenagers (aged 6 months to 18 years) who are receiving long-term aspirin therapy and therefore might be at risk for developing Reye's syndrome after influenza; and
- women who will be in the second or third trimester of pregnancy during the influenza season.

Persons Who Can Transmit Influenza to Those at High Risk

Persons who are clinically or subclinically infected can transmit influenza virus to persons at high risk for complications from influenza. Efforts to protect members of high-risk groups against influenza might be improved by reducing the likelihood of influenza exposure from their care givers. Therefore, the following groups should be vaccinated:

- physicians, nurses, and other personnel in both hospital and outpatient-care settings;
- employees of nursing homes and chronic-care facilities who have contact with patients or residents;
- employees of assisted living and other residences for persons in high-risk groups;
- persons who provide home care to persons in high-risk groups; and
- household members (including children) of persons in high-risk groups.

Other Groups To Consider

Persons Infected with Human Immunodeficiency Virus

Limited information exists regarding the frequency and severity of influenza illness or the benefits of influenza vaccination among persons with human immunodeficiency virus (HIV) infection. However, reports suggest that influenza symptoms might be prolonged and the risk for complications from influenza increased for some HIV-infected persons.

Breastfeeding Mothers

Influenza vaccine does not affect the safety of mothers who are breastfeeding

Influenza

For those of you wishing to bookmark an Internet site for the most current influenza information from the Centers for Disease Control and Prevention (CDC), try:

http://www.cdc.gov/ncidod/diseases/fluvirus.htm

This site includes the most recent CDC surveillance reports and information on antivirals for influenza A, vaccine recommendations, international trends, etc.

or their infants. Breastfeeding does not adversely affect immune response and is not a contraindication for vaccination.

Travelers

The risk of exposure to influenza during travel depends on the time of year and destination. In the tropics, influenza can occur throughout the year, whereas most influenza activity occurs from April through September in the temperate regions of the Southern Hemisphere. In temperate climate zones of the Northern and Southern Hemispheres, travelers also can be exposed to influenza during the summer, especially when traveling as part of large organized tourist groups containing persons from areas of the world where influenza viruses are circulating.

Persons at high risk for complications of influenza should consider receiving influenza vaccine before travel if they were not vaccinated with influenza vaccine during the preceding fall or winter and they plan to a) travel to the tropics; b) travel with large organized tourist groups at any time of year; or c) travel to the Southern Hemisphere from April through September.

Persons at high risk who received the previous season's vaccine before travel should be revaccinated with the current vaccine in the following fall or winter.

Because influenza vaccine might not be available during the summer in North America, persons aged 65 years or older and others at high risk might wish to consult with their physicians before embarking on travel during the summer to discuss the symptoms and risks of influenza and advisability of carrying antiviral medications for either prophylaxis or treatment for influenza.

General Population

Physicians should administer influenza vaccine to any person who wishes to reduce the likelihood of becoming ill with influenza (the vaccine can be administered to children as young as 6 months). Persons who provide essential community services should be considered for vaccination to minimize disruption of essential activities during influenza outbreaks. Students or other persons in institutional settings (e.g., those who reside in dormitories) should be encouraged to receive vaccine to minimize the disruption of routine activities during epidemics.

Persons Who Should Not Be Vaccinated

Inactivated influenza vaccine should not be administered to persons known to have anaphylactic hypersensitivity to eggs or to other components of the influenza vaccine without first consulting a physician. Information about vaccine components can be found in package inserts from each manufacturer.

Persons with acute febrile illness usually should not be vaccinated until their symptoms have abated. However, minor illnesses with or without fever do not contraindicate the use of influenza vaccine, particularly among children with mild upper respiratory tract infection or allergic rhinitis.

Administration of Influenza Vaccine

Timing

Beginning each September, influenza vaccine should be offered to persons at high risk when they are seen by health-care providers for routine care or as a result of hospitalization. For organized vaccination campaigns, the optimal time to vaccinate persons in high-risk groups is usually from October through mid-November, because influenza activity in the United States generally peaks between late December and early March. Administering vaccine too far in advance of the influenza season should be avoided in facilities such as nursing homes, because antibody levels can begin to decline within a few months of vaccination. If regional influenza activity is expected to begin earlier than December, vaccination programs can be undertaken as soon as current vaccine is available. Vaccine should be offered to unvaccinated persons even after influenza virus activity is documented in a community.

Simultaneous Administration of Other Vaccines, Including Childhood Vaccines

The target groups for influenza and pneumococcal vaccination overlap considerably. For persons at high risk who have not previously been vaccinated with pneumococcal vaccine, health-care providers should strongly consider administering pneumococcal and influenza vaccines concurrently. Both vaccines can be administered at the same time at different sites without increasing side effects. However, influenza vaccine is administered each year, whereas pneumococcal vaccine is not.

Children at high risk for influenza-related complications can receive influenza vaccine at the same time they receive other routine vaccinations.

Potential Expansion of Groups Recommended for Vaccination

During 1998, the ACIP formed a working group to explore issues related to the potential expansion of recommendations for the use of influenza vaccine in the future. These discussions were started because a) the impact of influenza might decline because of the development and potential combined use of new influenza vaccines, antiviral agents, and commercial rapid detection kits; b) the risk of influenza-related hospitalizations might be substantially increased among healthy children aged less than 5 years compared with older children; and c) a substantial cost benefit might result from vaccinating groups such as healthy young adults, who traditionally are not considered to be at high risk for influenza-related complications.

No recommendation for expansion beyond the current guidelines has been made as of April 30, 1999.

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The Managing Editor is H. Denny Donnell, Jr, MD, MPH, State Epidemiologist. Production Manager is Diane C. Rackers. Questions or comments should be directed to (573) 751-6128 or toll free (800) 392-0272.

Alternate forms of this publication for persons with disabilities may be obtained by contacting the Missouri Department of Health, Office of Epidemiology, P.O. Box 570, Jefferson City, MO 65102-0570, Ph: (573) 751-6128. TDD users can access the preceding phone number by calling (800) 735-2966.

LATE BREAKERS

☞ According to data from the Bureau of Labor Statistics and the Census of Fatal Occupational Injuries, workplace fatalities in Missouri increased from 123 in 1997 to 145 in 1998. The increase is partially due to an increase in motor vehicle accidents and falls from heights. Since 1992, workplace fatalities have fluctuated from a high of 155 in 1994 to a low of 123 in 1997, averaging 137 deaths per year. Leading causes of workplace fatalities remain motor vehicle, struck-by moving or falling objects, homicides and falls. For more information, please contact Tom Ray in the MO FACE program at (573) 751-6103.

☞ Shigellosis increased 617.6% from 51 cases reported in the first six months of 1998 to 366 cases reported in the first six months of 1999. The large increase in cases was due to outbreaks in daycare facilities and schools in the Southwestern and Eastern health districts. The number of reported cases has been decreasing in recent months. Like other foodborne diseases, the risk for acquiring Shigella can be markedly reduced by thorough handwashing. Please encourage all food care workers, child care providers and other persons to wash their hands thoroughly after using the toilet or changing diapers and before food handling or eating.

☞ The Midwest AIDS Training and Education Center (MATEC) and the AIDS Clinical Trials Unit at Washington University School of Medicine are presenting a symposium entitled "HIV 2000: Clinical Issues for the New Millennium" on November 2, 1999 at the Regal Riverfront Hotel in St. Louis, MO. This symposium is for primary care physicians, nurses, physician assistants, health educators, social workers and other care providers. For more information, contact Susan Wightman, BSN, ACRN at Washington University School of Medicine at (314) 362-2418 or (800) 432-0448. Discounted fee for enrollments postmarked by October 22, 1999.

Missouri EPIDEMIOLOGIST

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Bioterrorism: A Public Health Issue

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Biological warfare has existed for centuries. Examples include the Mongols catapulting plague-infested bodies into Caffa to break a siege in 1346 and in 1763, blankets used by smallpox victims being given to American Indians at Fort Pitt. During World War II and the "Cold War" era, many nations, including the United States, had active biological weapons research programs, and there is evidence of some limited biological weapons use during that war. A 1972 international agreement to ban biological weapons was ratified by 140 nations, but included no verification mechanism. Evidence supports violation of this treaty. In 1979 an accidental release of anthrax in Sverdlovsk, Russia, occurred from a secret bioweapons plant. At least 66 people working or living downwind from the facility died of pulmonary anthrax. In 1992, Russian president Boris Yeltsin admitted that the Soviets had an active biological weapons program until that year. Currently at least 17 nations are believed to have offensive biological weapons programs.[1]

Bioterrorism—the use of biological agents to intentionally produce disease in susceptible populations to meet terrorist aims—has become an increasing concern throughout the world, including the United States. Information on how to construct chemical or biological weapons is available on the Internet. While still requiring a high level of expertise and financial resources, advances in biotechnology have made the production and dissemination of pathogenic organisms or chemical toxins a real possibility. For example, Aum Shinrikyo, a Japanese cult, is known for having released sarin gas in a Tokyo subway in 1995. Over 5,500 people sought medical treatment; 20 percent were hospitalized and 12 people died. The cult was found to have facilities producing both chemical and biological weapons, and had attempted the release of botulinum toxin and anthrax spores without success.

No one can say for sure how likely it is that a bioterrorist attack will occur in the United States in the next several years, though some believe it is a significant threat, particularly related to concerns regarding doomsday cult reactions to the millennium. There is agreement, however, that it is essential for the government, public health community, and medical profession to be prepared for this type of health emergency, just as it is necessary to be prepared for natural disasters. It is tempting to believe that Vermont is not at any risk for being the target of such an attack. However, it is not possible to be sure that an event will not happen here. An attack could be focused at a site considered less well prepared to respond. In addition, Vermont could be affected by an event occurring in New York City, Boston, or even distant parts of the country. Bioterrorism preparedness also includes the ability to respond appropriately to threats such as anthrax hoaxes. Nationally, anthrax threats increased dramatically after publicity of the arrest in February, 1998 of a white supremacist who had threatened to release anthrax in Las Vegas.[2] Vermont was among states experiencing anthrax hoaxes this year.

Early detection of a bioterrorist attack is crucial. Some agents cause diseases that could have relatively short incubation periods, and have high mortality rates when proper treatment is not initiated early in the course of infection. Morbidity and mortality can be greatly reduced by early identification, prophylaxis of those exposed, and appropriate early treatment of the infected. For agents that can be transmitted from person-to-person, it is obviously even more crucial to identify the disease early. To detect unusual illnesses caused by intentionally

(continued on page 2)

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(continued from page 1)
released agents, a high index of suspicion must be maintained, and suspicious illnesses should be reported before they are confirmed. This may enable the Health Department to detect trends in what appears at first to be sporadic disease.

The initial detection of an unannounced bioterrorist attack would rely on both the diagnostic capabilities of physicians and other health care providers, and the ability of public health surveillance to detect unusual patterns of disease. The following situations could suggest a bioterrorism event, and should be reported to the Health Department:

1. Single, definitively diagnosed or strongly suspected case of illness due to a potential bioterrorist agent occurring in a patient with no known risk factor.
2. Cluster of patients presenting with a similar syndrome that includes unusual disease characteristics or unusually high morbidity or mortality without an obvious etiology.
3. **Unexplained** increase in a common syndrome above seasonally expected levels.

The CDC has listed several potential agents of particular concern, including *Bacillus anthracis* (anthrax), smallpox virus, *Yersinia pestis* (plague), *Clostridium botulinum* toxin, and *Francisella tularensis* (tularemia). Identification of these agents would be difficult because they are not expected, many have nonspecific presenting symptoms, and health care providers are not familiar with them. The clinical features of anthrax and smallpox, two agents most frequently mentioned as possible bioterrorism agents, are described below. The information below is from the U.S. Army Medical Research Institute of Infectious Diseases[3], and two recently published consensus statements.[4-5]

Anthrax: *Bacillus anthracis* is a rod-shaped, gram-positive sporulating organism; the spores are the usual infective form. While primarily a zoonotic disease, human illness can occur in people working with animals or animal products. While anthrax can occur in cutaneous or gastrointestinal forms, inhalational anthrax is the chief bioterrorism concern.

After an incubation period averaging one to six days, inhalational anthrax presents as fever, malaise, fatigue, cough, mild chest discomfort and possibly vomiting or abdominal pain. This stage lasts for hours or days. In untreated patients, there may or may not be a brief period of improvement; the patient then abruptly develops severe respiratory distress with dyspnea, diaphoresis, stridor, and cyanosis. Shock and death occur within 24-36 hours after onset of severe symptoms. Physical findings are initially nonspecific; as disease progresses, the chest x-ray may reveal a widened mediastinum with or without pleural effusions. *Bacillus anthracis* can be detected by Gram stain of blood and by blood culture, but often not until late in the course of illness.

Treatment with antibiotics early in the course of symptoms is crucial; once patients have developed significant symptoms, the mortality rate is high. Most naturally occurring strains of anthrax are sensitive to penicillin, however, the possibility of a penicillin-resistant strain must be considered. A recently published consensus statement "Anthrax as a Biological Weapon: Medical and Public Health Management"[4], recommends ciprofloxacin for treatment or prophylaxis of exposed adults and children until susceptibility to penicillin is confirmed. Anthrax is not transmitted person-to-person. Prophylaxis for those exposed to aerosolized anthrax would require a 60 day antibiotic regimen, though shorter duration may be recommended if anthrax vaccine is used in conjunction with antibiotic. For individuals involved in an incident with threatened exposure to anthrax, personal decontamination is rarely if ever needed unless the individual has had direct contact with the substance alleged to be anthrax.

Smallpox: Smallpox was declared eradicated by the World Health Organization in 1980. Two repositories were approved to hold the remaining variola virus. These two reference laboratories are the Centers for Disease Control and Prevention (CDC) in Atlanta and a laboratory in Moscow. However, during the past several years allegations have been made that smallpox virus was weaponized in the Soviet Union, and there is concern that virus stores may have been moved to additional sites. Routine vaccination for smallpox in the United States was discontinued among civilians in 1972. The immune status of individuals vaccinated before that time is not certain, but immunity is believed to decline substantially within 10 years of vaccination. Thus, worldwide there is high susceptibility to this infection.[5] Smallpox is caused by variola virus, which is an Orthopox virus. Transmission is person to person by respiratory discharges (droplet nuclei or aerosols), by direct contact with skin lesions, or contact with contaminated bedding or clothing. The incubation period averages 12–14 days (range 7–17 days). Individuals are not infectious until onset of rash.

Smallpox infection begins with abrupt onset of fever, malaise, rigors, vomiting, headache and backache. During this stage of illness about 10 percent of lighter-skinned patients have an erythematous rash. Lesions appear two to three days later. As opposed to chickenpox, smallpox lesions are more numerous on the face and extremities, occur on the palm, and develop synchronously. Mortality is approximately 30 percent; death is thought to occur from toxemia associated with circulating immune complexes and soluble variola antigens.[5] Two other clinical presentations, hemorrhagic-type smallpox and flat-type or malignant smallpox, occur in approximately 10 percent of cases and have a high mortality rate. Laboratory confirmation of infection would be essential and

would need to be performed at the CDC's biosafety level 4 laboratory.

There is currently no chemotheraputic agent known to be effective in the treatment of smallpox; only supportive care could be provided. Potential antiviral agents are undergoing investigation. Prophylaxis for individuals known to be exposed would be vaccination, which should provide some level of protection if given within four days of exposure. The supply of stockpiled vaccine in the United States is limited and estimated to be sufficient for vaccinating six to seven million people.[5] Serious complications can occur in vaccinated individuals, requiring the use of vaccinia immune globulin (VIG). Availability of VIG is also extremely limited. Both smallpox vaccine and VIG would only be made available by the CDC through state health departments.

Conclusion

The intentional release of a biologic agent would be a public health emergency. Early detection would be essential to minimizing the impact of such an event. Clinical suspicion and prompt reporting by physicians and other health care providers of any unusual disease clusters or manifestations to the Health Department is key to the early recognition of both natural outbreaks and bioterrorist events.

REFERENCES:

1. Cole LA. The specter of biological weapons. Sci Am 1996:60–65.
2. Tucker JB. Historical trends related to bioterrorism: an empirical analysis. Emerg Infect Dis 1999;5:498–504.
3. US Army Medical Research Institute of Infectious Diseases. Medical Management of Biological Casualties. 3rd ed. Fort Detrick, Frederick Md. US Army Medical Research Institute of Infectious Diseases. 1998.
4. Inglesby TV, Henderson DA, Bartlett JG et al. Anthrax as a biological weapon: medical and public health management: consensus statement. JAMA 1999;281:1735–45.
5. Henderson DA, Inglesby TV, Bartlett JG, et al. Smallpox as a biological weapon: medical and public health management: consensus statement. JAMA 1999:281:2127–37.

Editorial Note: Since Missouri is a transportation and tourism hub, we too need to be prepared for bioterrorist acts. See article below. In the next issue of our newsletter, we will publish some additional material describing bioterrorism preparedness activities that Missouri is involved in.

Missouri Receives Funding for Bioterrorism Preparation

Nancy Hoffman, R.N., M.S.N.
Center for Health Information Management and Epidemiology

The Missouri Department of Health will be a participant in the latest national effort to prepare the United States for bioterrorism attacks.

The department will receive $630,000 to develop a Health Alert Network, which will link public health agencies at the local level to the state health department. This will enhance the sharing of information and health data reports should the nation become the target of a terrorist attack with a biological or chemical weapon. The funds are being provided by the Centers for Disease Control and Prevention (CDC), as part of a $40 million effort to prepare the nation for bioterrorism.

Public health will play a crucial role in protecting Missourians should we find ourselves the victim of a bioterrorist act. The protection will happen at the community level, so it is important that communities have immediate access to the latest health and safety information.

Missouri's Health Alert Network will allow the Department of Health to develop an improved electronic communications network so information can be shared electronically in the case of an unusual disease outbreak or a confirmed bioterrorist attack. Missouri will increase its capacity to send and receive electronic information from CDC and other agencies.

The funding will support a Distance Learning Coordinator in the Office of Training and Professional Development. This person will coordinate broadcasts from the Centers for Disease Control and Prevention (CDC) and others, work with various program areas to coordinate training, and provide a central source of support, coordination and information related to distance learning.

A portion of the funds will be contracted to the Kansas City, St. Louis and Springfield health departments to enhance their capacity to communicate with private providers and other key responders to a bioterrorism or other public threat. Each of these will support the Metropolitan Statistical Area (MSA) designated Level A local public health agencies in their area.

The Department of Health will use these funds to provide 24 hour/day/7 day a week secure direct connection Internet service to local public health agency administrators who do not have or are not satisfied with their current provider. In addition, the department will provide e-mail via its Groupwise e-mail system to all local public health agency administrators that currently do not have this capacity.

Broadcast faxing capabilities, video conferencing and computer-based training for staff development were also included in the grant. CHIME staff will be working with the local public health agencies during the coming year to accomplish the grant objectives.

Viral Gastroenteritis Caused by Norwalk-Like Viruses: What's New at the State Public Health Laboratory?

Mike Hanauer
Missouri State Public Health Laboratory

CDC estimates that viral agents cause over 30 million cases of gastroenteritis each year. Of these, an estimated 23 million are attributed to Norwalk-like viruses (NLVs). Also called small round-structured viruses, NLVs are classified in the family *Caliciviridae* and consist of a group of genetically diverse, single-stranded RNA viruses. Included in this group are Norwalk virus, Snow Mountain Agent and others.

NLVs are a significant cause of outbreaks of acute gastroenteritis. Outbreaks have been reported from swimming pools, on cruise ships, in hospitals and nursing homes, in schools and universities, in restaurants, and at catered events. While the majority of outbreaks of acute gastroenteritis can be attributed to NLVs, their role in the cause of sporadic cases is unknown. Studies in both hospital inpatients and outpatients with gastroenteritis have found that in 91 percent of the cases, no etiologic agent can be identified leading researchers to believe that NLVs are a major cause of sporadic disease also. The mode of transmission of NLVs is primarily fecal-oral through the consumption of contaminated food (especially oysters or other shellfish and salads) or water. Person-to-person transmission has also been suggested as well as possible airborne spread. Because NLVs are highly infectious, careful handwashing and attention to hygienic precautions in food preparation should always be practiced.

The incubation period for NLVs is usually 24–48 hours, but may be as short as 10 hours in common-source outbreaks. NLVs usually cause a self-limited mild to moderate illness. The symptoms may begin abruptly with vomiting, diarrhea or both and may also include abdominal cramps, headache, myalgia, sore throat, chills or low-grade fever. Diarrhea is relatively more prominent in adults, while vomiting is more common in children. The duration of symptoms is usually only 12–60 hours. A variable number of NLV infections in an outbreak may also be asymptomatic.

Until recently, many outbreaks of NLVs went undiagnosed because there were no readily available laboratory tests for these agents. The viruses were diagnosed primarily through the use of electron microscopy, a technique unavailable to most laboratories. In Missouri, specimens from suspected NLV outbreaks were transported to the

Testing for Norwalk-Like Viral Gastroenteritis Outbreaks

Norwalk-like virus should be suspected when:

- ✓ Bacterial and parasitic agents are not detected
- ✓ The incubation period is 24–48 hours
- ✓ Vomiting occurs in at least 50% of affected individuals, and
- ✓ The average duration of illness is 12–60 hours

NOTE: Testing of specimens for the Norwalk-like virus by the Missouri State Public Health Laboratory requires prior approval from the Section of Communicable Disease Control and Veterinary Public Health.

For information on collecting and submitting samples for testing, please contact:

Section of Communicable Disease Control
and Veterinary Public Health
(573) 751-6113 or (800) 392-0272
or
Virology Section
Missouri State Public Health Laboratory
(573) 751-0633
or
Your District
Communicable Disease Coordinator

Centers for Disease Control and Prevention (CDC) in Atlanta, Georgia. CDC has strict criteria for accepting specimens, including the minimum submission of 6-10 stools per outbreak and the additional requirement of collecting and submitting sera from the patients. This process results in failure or delay in determining the cause of the outbreak.

The Missouri State Public Health Laboratory has developed and validated a method for detecting NLVs from clinical samples. This process, known as Reverse Transcriptase-Polymerase Chain Reaction (RT-PCR) is a highly sensitive and specific method of viral detection in outbreak situations. However, due to inhibitors to RT-PCR that may be present in some fecal specimens, this method is not recommended for diagnosis of sporadic or individual cases. As a result, it will be used to characterize outbreaks only.

The appropriate specimen for RT-PCR testing for NLVs is a fresh stool specimen collected as soon as possible after onset of symptoms, ideally within 48 hours and no later than 72 hours. Although viral particles may be shed for up to 10 days, the amount of virus present may be too small to detect later in the illness. Specimens should be collected in sterile containers without transport media and should be stored and transported to the laboratory cold. A minimum of four specimens from affected individuals in a suspected outbreak is required for testing at the State Public Health Laboratory. Please refer to specimen kit insert for complete instructions on requesting this test and submitting specimens.

The ability of the State Public Health Laboratory to offer the RT-PCR test for NLVs is a significant addition to the capabilities of the public health system to recognize and control outbreaks of the most common cause of non-bacterial gastroenteritis.

If you would like more information on this or other tests available, please contact the Missouri State Public Health Laboratory at (573) 751-3334.

Updated HIV Treatment Guidelines

Guidelines for the prevention of opportunistic infections in HIV-infected persons have been updated:

CDC. 1999 USPHS/IDSA Guidelines for the Prevention of Opportunistic Infection in Persons Infected With Human Immunodeficiency Virus: U.S. Public Health Service (USPHS) and Infectious Diseases Society of America (IDSA). MMWR 1999;48(No. RR-10)

These guidelines, along with other HIV treatment recommendations, are available on the World Wide Web at: **http://www.hivatis.org/trtgdlns.html**.

Tuberculosis Web-Based Self-Study Modules

The Centers for Disease Control and Prevention (CDC) has released web-based self-study modules on tuberculosis. This interactive course is a set of five modules covering the following topics:

- Transmission and Pathogenesis of Tuberculosis
- Epidemiology of Tuberculosis
- Diagnosis of Tuberculosis Infection and Disease
- Treatment of Tuberculosis Infection and Disease
- Infectiousness and Infection Control

The web address for the modules is **http://www.cdc.gov/phtn/tbmodules**.

Target audience includes: outreach workers, nurses, health care workers, administrators, and medical and nursing students. Participants can earn 24 continuing nursing education contact hours (CNEs) or 2.0 continuing education units (CEUs) through the on-line continuing education component of the course.

Minimum computer requirements include:

- PC with Windows 3.1 (or higher) or Power Macintosh
- 16" color monitor (256 color monitor is better)
- Internet connection—28.8 kbps or better
- Web browser—preferably Netscape Navigator version 2.0 or higher or Microsoft Internet Explorer.

Questions regarding the tuberculosis self-study modules should be directed to the Section of Vaccine-Preventable and Tuberculosis Disease Elimination at (800) 611-2912.

Missouri Department of Health Issues Alert Regarding Increases in Bacterial Disease

Marion Warwick, M.D., M.P.H.
Section of Communicable Disease Control and Veterinary Public Health

On September 3, 1999 as Missouri children headed to schools and to child care centers, the Department of Health issued a news release about a recent increase in shigellosis, an infectious bacterial disease. This news release was part of a joint intervention effort by the Bureau of Child Care Safety and Licensure and the Section of Communicable Disease Control and Veterinary Public Health to resolve a statewide increase in shigellosis cases during the first six months of 1999.

During the first six months of 1999, Missouri experienced a 544 percent increase in shigellosis cases over the same time the previous year, from 57 to 367 cases. Fifty-eight percent of the cases were in children 10 years and younger. About one-third of the cases involved children in child care. Children attending elementary schools also have been infected. Although rates have been on the decline since June, it is important to take preventive measures.

Shigellosis generally causes diarrhea with fever and nausea. Symptoms sometimes include vomiting, cramps and headache. It can be spread when an infected person fails to wash his or her hands after using the bathroom or changing the diaper of a child with the infection. Just a few particles, not necessarily visible, can be enough to transmit infection. Therefore, careful handwashing prior to food preparation or eating is also important.

Shigellosis is highly contagious and can spread rapidly through a school or a child care center. However, proper and frequent handwashing by children and caregivers can be an effective intervention to reduce the transmission of this disease.

The Missouri Department of Health has provided a fact sheet on shigellosis for child-care centers and providers with detailed recommendations for preventing shigellosis. We are printing a copy of that fact sheet on pages 7–8 of this issue. We are also providing a general fact sheet on shigellosis on pages 9–10 that can be distributed to patients/clients, especially those who work in food service or child care.

Cases of shigellosis should be reported to your local public health agency within three days of first knowledge or suspicion. Cases can also be reported to the Section of Communicable Disease Control and Veterinary Public Health at (573) 751-6113 or (800) 392-0272.

LATE BREAKERS

☞ **First Influenza Cases**—On October 12, 1999, Greene County reported the first laboratory confirmed case of influenza. The case was identified as a 13-year-old female who had symptom onset October 11. The specimen was confirmed as influenza A and forwarded to the State Public Health Laboratory where it was subtyped as influenza A (H3N2). As of November 5, subsequent cases of influenza A have been reported: 2 in St. Louis City, 1 in Cape Girardeau County, 1 in St. Charles County, 1 in Taney County and 1 in Camden County. According to the Centers for Disease Control and Prevention, during September through October 29, laboratory-confirmed influenza A virus infections have been reported in 19 states. One state, Tennessee, has reported influenza B. If you have questions, please contact the Section of Communicable Disease Control and Veterinary Public Health at (800) 392-0272.

☞ **Meningococcal Vaccine and College Students**—On October 20, 1999, the Advisory Committee on Immunization Practices (ACIP) modified its guidelines for use of meningococcal vaccine to prevent bacterial meningitis. The modifications are particularly directed at college freshmen who live in dormitories, a group with a modestly increased risk of meningococcal disease relative to other persons their age. The ACIP guidelines are that college freshmen should be made aware of their increased risk of contracting meningitis, and all students and their parents should be informed of the availability of the vaccine.

Earlier this year, the American College Health Association recommended that all college students, especially those who live in dormitories, consider getting the vaccination. There are no Missouri statutes requiring immunizations for students at institutions of higher learning. However, colleges, universities and other such institutions may have entrance requirements. Parents and students should check with their student health service about recommendations and availability of the vaccine.

The full text of CDC's statement and information on meningococcal disease can be found at **http://www.cdc.gov/ncidod/dbmd/diseaseinfo/meningococcal_college.htm**. If you do not have access to the Internet and would like a copy of the statement, please contact the Section of Vaccine-Preventable and Tuberculosis Disease Elimination at (800) 699-2313.

TEAR OUT AND COPY FOR DISTRIBUTION TO PATIENTS

Shigellosis Fact Sheet

What is shigellosis?

Shigellosis is a bacterial infection that affects the intestines. It is a fairly common disease.

Who gets shigellosis?

Anyone can get shigellosis but it is recognized more often in young children. Children in day care centers, travelers to foreign countries, institutionalized people and homosexuals are at greatest risk.

How are *Shigella* bacteria spread?

Shigella bacteria are found in the intestines and stool of infected people who, in turn, may contaminate food or water. The bacteria are spread by direct contact with an infected person, by eating or drinking contaminated food or water, or by contact with a contaminated object.

What are the symptoms?

People infected with the *Shigella* bacteria may have mild or severe diarrhea (often with traces of blood or mucous), abdominal cramping, fever, nausea, and vomiting. Some infected people may not show any symptoms.

How soon do symptoms appear?

The symptoms usually appear 1 to 3 days after exposure and usually last for 4 to 7 days.

When and for how long is a person able to spread shigellosis?

People with shigellosis may be able to spread the disease even after they are well. Most people pass the *Shigella* bacteria in their stool for 1 to 2 weeks. Sometimes people continue to pass the bacteria for as long as 6 weeks.

Should infected people be excluded from school or work?

People with diarrhea need to be excluded from day care, food service or any other group activity where they may present a risk to others. Most infected people may return to work or school when their diarrhea stops if they wash their hands after visits to the toilet. Foodhandlers, health care workers, children and staff in day care, must obtain the approval of the local or state health department before returning to their routine activities.

How is shigellosis treated?

Most people with shigellosis will recover on their own. Some may require fluids to prevent dehydration. Antibiotics are sometimes used to treat severe cases or to shorten the carrier phase. Antibiotics may allow foodhandlers, health care workers, institutionalized individuals, children and staff in day care, to return sooner to their routine activities.

What can be done to prevent the spread of shigellosis?

Since *Shigella* bacteria are passed in the stool, the single most important way to prevent the disease is careful handwashing after using the toilet, after diapering and before preparing food.

For more information about shigellosis, ask your physician or health care provider or contact:

Missouri Department of Health
Section of Communicable Disease Control
and Veterinary Public Health
Ph: (573) 751-6113
or (800) 392-0272

September 1999

TEAR OUT AND COPY FOR DISTRIBUTION TO CHILD CARE PROVIDERS

Shigellosis Fact Sheet for Child Care Setting

About Shigellosis

- Shigellosis is a contagious disease that causes diarrhea, with fever and nausea. The disease can sometimes cause vomiting, cramps and headache.
- Shigellosis germs are found in the stool (feces) of a person with the disease. The shigellosis germs can get on the person's hands after using the toilet.
- You can get shigellosis by direct contact, or by placing something in your mouth that has contacted stool from a person with the disease. Very few shigellosis germs are needed to cause illness; therefore, the hands may not appear to be dirty.
- Illness usually begins 1 to 3 days after a person is exposed, but it may be as long as a week before illness occurs.
- Shigellosis is most common in children 1 to 4 years of age and is an important problem in child care centers in the United States.

How to Prevent and Stop the Spread of Shigellosis in Child Care Settings

1. **Handwashing is very important in preventing shigellosis.**

   Proper handwashing includes the following:

   ✓ Wash your hands for 10 to 15 seconds, using soap and warm running water.

   ✓ Rub your hands vigorously together, washing the backs of hands, wrists, between fingers and under fingernails.

   ✓ Rinse hands well, dry hands with a paper towel and turn off the water using a paper towel.

Proper handwashing should be done:

- ✓ Child care staff should wash their hands after using the toilet, after changing diapers, before preparing foods or beverages or any other time their hands may become dirty.
- ✓ Children should wash their hands after using the toilet, before eating, upon arrival, just before departing the center and any other time their hands may become dirty.
- ✓ Children's and staff's hands must be washed after diapering.
- ✓ Food handlers must frequently wash their hands with soap and warm running water (clean under fingernails).

2. Child care staff, food handlers and children with diarrhea should not be in the child care facility.

3. Furniture, equipment and personal items used by children and staff must be washed, rinsed and then sanitized with a bleach solution of 100–200 ppm (approximately 1 teaspoon of bleach per gallon of water).

4. Keep bathroom doors closed when not in use.

For more information about shigellosis, contact:

Missouri Department of Health
Section of Communicable Disease Control
and Veterinary Public Health
Ph: (573) 751-6113
or (800) 392-0272

September 1999

Patterns in Missouri Hospital Closings

Mary Jo Mosley
Bureau of Health Resources Statistics

As of October 1999, there were 124 general medical surgical hospitals to provide community care to an estimated 5,439,000 Missourians. In 1983 there were 150. In the past 15 years, 26 hospitals have closed, merged and/or changed to a different service area or function. Twenty-two (85%) of these were general medical surgical facilities. Since 1983, the number of hospital beds has decreased by over 7,600, and the discharge rate has decreased from 178 discharges per 1,000 population to 132.2 per 1,000.

Table 1 shows the characteristics for Missouri's general hospitals from 1983–98. The table does not include state, federal or specialty hospitals. Two state facilities, the University of Missouri Hospital and Clinics and the Missouri Rehabilitation Center, are included because the majority of their admissions are medical surgical patients.

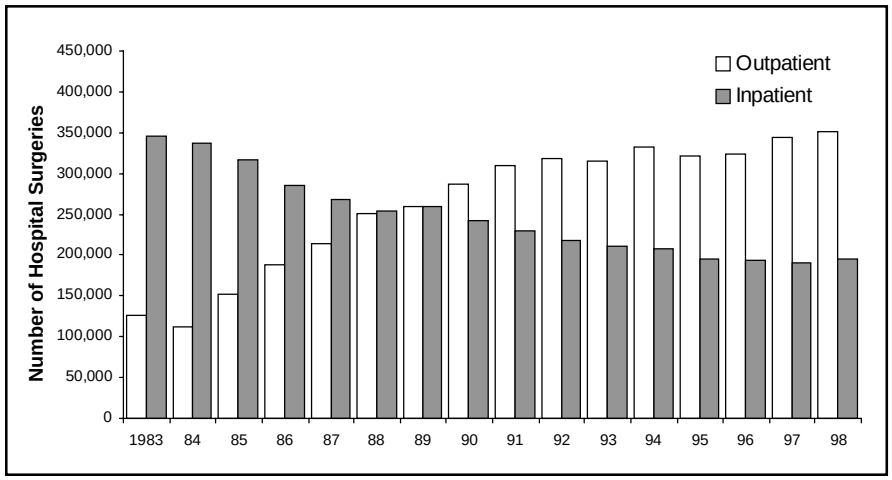

Figure 1. Number of inpatient and outpatient hospital surgeries by year, Missouri, 1983–98.

Trends to Outpatient Care

More health care services are being provided on an outpatient basis. Outpatient surgeries have steadily increased over the past 15 years. See Figure 1. In 1998, 64 percent of surgeries were performed as outpatient compared to 26 percent in 1983. There were as many outpatient surgeries in 1998 as there were inpatient surgeries in 1983. The total number of surgeries performed in Missouri hospitals in 1998 was about the same as the total number of hospital surgeries performed 15 years ago. The number of surgeries performed in hospitals has been affected by the past decade's growth of ambulatory surgery centers (ASCs). In 1983, there

(continued on page 12)

Table 1. Number of General Hospitals and Utilization Characteristics by Year, Missouri, 1983–98.

Year	Number of Hospitals	Staffed Beds	Patient Days	Staffed-Bed Occupancy Rate	Average Length of Stay	Number of Discharges	Discharge Rate Per 1,000
1983	150	27,201	6,876,900	70.9	7.7 days	885,098	178.0
1984	150	26,559	6,310,767	66.3	7.5 days	858,341	171.6
1985	146	25,123	5,736,455	63.3	7.4 days	786,259	156.1
1986	146	24,568	5,615,649	62.6	7.4 days	765,588	151.1
1987	144	24,256	5,489,552	62.0	7.5 days	734,526	143.8
1988	140	23,898	5,367,303	61.5	7.5 days	716,452	139.4
1989	137	23,605	5,384,307	62.5	7.5 days	716,465	140.5
1990	137	23,460	5,286,795	61.7	7.4 days	711,966	139.1
1991	136	23,270	5,109,877	60.2	7.3 days	693,037	134.3
1992	133	22,813	5,046,200	60.6	7.3 days	684,321	131.8
1993	131	22,994	4,912,479	58.5	7.2 days	674,798	128.9
1994	131	22,215	4,616,936	56.9	6.7 days	680,000	128.8
1995	131	20,982	4,382,022	55.9	6.4 days	683,682	128.4
1996	126	20,237	4,192,272	56.8	6.1 days	697,144	131.3
1997	125	19,844	4,053,716	56.0	5.8 days	695,992	129.8
1998	125	19,587	4,053,475	56.7	5.6 days	714,377	132.2

(continued from page 11)
were seven freestanding ambulatory surgery centers. In 1998, there were 43 reporting nearly 83,000 surgical procedures.

Inpatient Utilization is Declining

The number of hospital inpatient days continues a steady downward trend. The hospital licensed-bed occupancy rate in Missouri declined from 74 percent in 1983 to 44.8 percent in 1998. Missouri's 1998 staffed-bed occupancy average of 56.7 percent for general medical surgical hospitals continued to be higher than the United States staffed-bed occupancy average of 47 percent. Figure 2 compares the decline in the rate of hospital inpatient days for Missouri with the United States from 1983–98.

Emergency Room Visits

Emergency room utilization is highest for persons under age 15. In 1997, the rate for this age group in Missouri was 113.6 per 1,000 population. The rate for persons over age 65 was 23.9 per 1,000 population. The number of uninsured Missourians using hospital emergency rooms was 310,858 in 1997, and has not changed much in the last five years. Emergency room use rates in Missouri rose at a steady rate until 1992, and then leveled off. There was a slight increase in the 1998 rate for the total population. See Figure 3.

Reason for Hospital Closings

There are 26 fewer medical-surgical hospitals in Missouri in 1999 than there were in 1983. Mergers and consolidation of services have changed the number of facilities providing hospital care. There are currently fewer general hospitals and more specialty hospitals. In October 1999, Missouri had two rehabilitation, 16 psychiatric, three long-term acute care and one children's orthopedic hospital. There are three pediatric medical-surgical and one hospital specifically for pediatric psychiatric care. Eleven of the hospital closures in the past 15 years have been in rural communities. Most closures occurred in the late 1980s and early 1990s. The majority of these hospitals had a small patient volume and were located near another facility. Table 2 shows some of the characteristics of the closed hospitals.

Table 2. Characteristics of General Hospitals* That Closed in Missouri, 1983–99

Hospital	City	Admission Estimate Prior to Closing	Closing Date	Miles to Nearest Hospital
Arcadia Valley Hospital	Pilot Knob	763	Aug. 1999	20
CareUnit Hospital	St. Louis	1,565	April 1998	10
Central Medical Center	St. Louis	2,291	Oct. 1995	5
Chaffee General Hospital	Chaffee	416	May 1991	20
Dade Co. Memorial Hospital	Lockwood	559	Jan. 1991	20
Deaconess Medical Center North	St. Louis	2,719	Feb. 1993	10
Department of Community Health	Clayton	4,512	June 1986	10
Jane Chinn Memorial	Webb City	930	June 1986	10
Keller Memorial Hospital	Fayette	376	June 1995	20
Kelling Hospital	Waverly	696	Dec. 1986	20
Levering Hospital	Hannibal	2,274	Dec. 1988	5
Martin Luther King Memorial	Kansas City	1,243	Oct. 1983	10
Menorah Hospital	Kansas City	8,979	Oct. 1995	5
Mercer Hospital	Princeton	409	Dec. 1983	20
Mercy Hospital	Mansfield	1,435	Sept. 1991	30
Pershing Regional Hospital	Marcelline	588	Sept. 1990	5
Plaza Hospital	Kansas City	125	March 1985	5
Poplar Bluff Hospital	Poplar Bluff	455	March 1987	10
Pulaski County Hospital	Waynesville	1,122	Nov. 1986	20
Robert Koch Hospital	St. Louis	357	Nov. 1983	10
St. Louis City Hospital	St. Louis	10,159	June 1985	5
St. Marys on the Mount	St. Louis	514	Jan. 1985	5
Sweet Springs Com. Hospital	Sweet Springs	427	Dec. 1991	10
University of Health Science	Kansas City	3,374	Sept. 1988	5

*Table does not include hospitals no longer operating as medical facilities due to mergers.

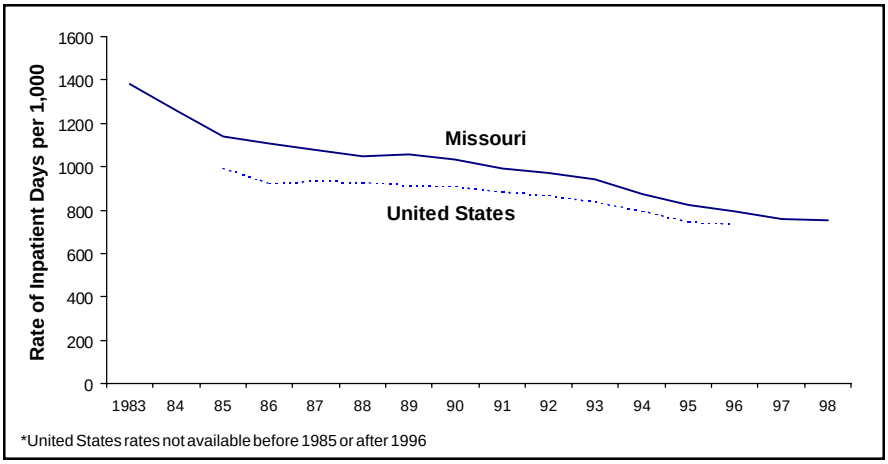

Figure 2. Rate of hospital inpatient days by year, Missouri and United States, 1983–98.

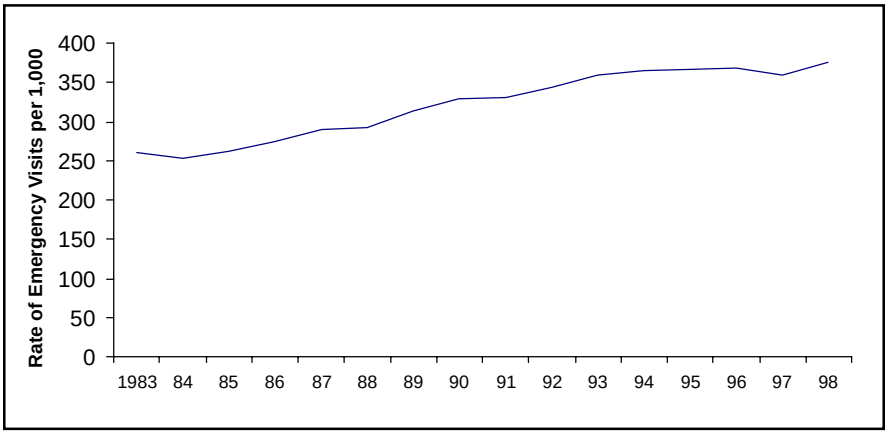

Figure 3. Rate of emergency room visits by year, Missouri, 1983–98.

Vaccines for Children Update

The Section of Vaccine-Preventable and Tuberculosis Disease Elimination is pleased to announce the following changes in the Vaccines for Children (VFC) Program:

- ✔ Influenza vaccine is now available for VFC-eligible children 6 months through 18 years of age.
- ✔ Hepatitis A vaccine is now available to all VFC-eligible children 2 through 18 years of age. You may choose *Vaqta* by Merck or *Havrix* by SmithKline.

If you have questions, please call the VFC Program at (800) 219-3224.

Summary

Utilization of Missouri hospitals has been moving downward for some time. Inpatient days and average length of stay continue to decline. Changes in occupancy rates, duration of stay and the number of staffed beds is partly due to the increase in utilization of outpatient care. Managed care limits have affected admitting decisions and when a patient is discharged. Even though there are more people with fewer hospitals and fewer beds, occupancy continues to decline. Ambulatory surgery centers are replacing some inpatient and outpatient surgery hospital functions. New procedures, technology and home health care have reduced the need for longer hospital stays.

Changes to MMWR Continuing Education Data Management System

MMWR Recommendations and Reports first published a Continuing Education (CE) component on October 16, 1998. Because of the unexpectedly large response to the program, reviewing print examinations and mailing certificates to MMWR readers have been delayed.

To address the backlog in processing previously submitted examinations, and to effectively manage a program of this size, MMWR has installed a new examination management system. The new system speeds processing of examinations submitted by mail and allows the user to complete tests and receive credit through the World-Wide Web at **http://www2.cdc.gov/mmwr/cme/conted.html**. To reduce the costs of this free service, MMWR readers are encouraged to use the online examinations. The new system will require prior users of the online system to re-register. Users who registered and took examinations online before October 21, 1999, will not be able to view their complete transcripts until the old database is merged with the new database, which should be completed by January 2000. Questions concerning the change should be sent by e-mail to the continuing education coordinator at **mmwrce@cdc.gov**.

Hypothermia Mortality in Missouri

Diane C. Rackers
Office of Epidemiology

Cold weather is a hazard to life in Missouri. During the past ten winters, 123 Missourians have died due to hypothermia, an average of 12 deaths per year. See Figure 1.

The rate of mortality due to hypothermia in Missouri increases sharply at older ages as seen in Figure 2. Hypothermia death rates increase with age, with the elderly at the highest risk for mortality because of physiologic changes (e.g., lack of appropriate vasoconstriction in response to cold environments, decreased basal metabolic rate, and impaired shivering mechanism) and underlying disease.[1] Limited mobility and less perception of cold are also contributing factors.

During the past ten winters in Missouri, those age 65 and over accounted for 65 (53%) of the 123 hypothermia deaths in Missouri. Of those 65 deaths, 46 (71%) were males and 19 (29%) were females. Of the 46 deaths in males, 37 (80%) were white and 9 (20%) were black. Of the 19 deaths in females, 18 (95%) were white and 1 (5%) was black. Of the 65 deaths in the elderly, 10 (15%) death certificates indicated the cause of death as alcohol related; 34 (52%) indicated no alcohol relationship and 21 (32%) indicated unknown alcohol relationship or left the field blank.

During the past ten winters in Missouri, those age 64 and younger accounted for 58 (47%) of the 123 hypothermia deaths in Missouri. Of those 58 deaths, 49 (84%) were males and 9 (16%) were females. Of the 49 deaths in males, 32 (65%) were white, 16 (33%) were black and 1 (2%) was American Indian. Of the 9 deaths in females, 4 (44%) were white and 5 (56%) were black. Of the 58 deaths in those age 64 and younger, 30 (52%) death certificates indicated the cause of death was alcohol related; 20 (34%) indicated no alcohol relationship and 8 (14%) indicated unknown alcohol relationship or left the field blank.

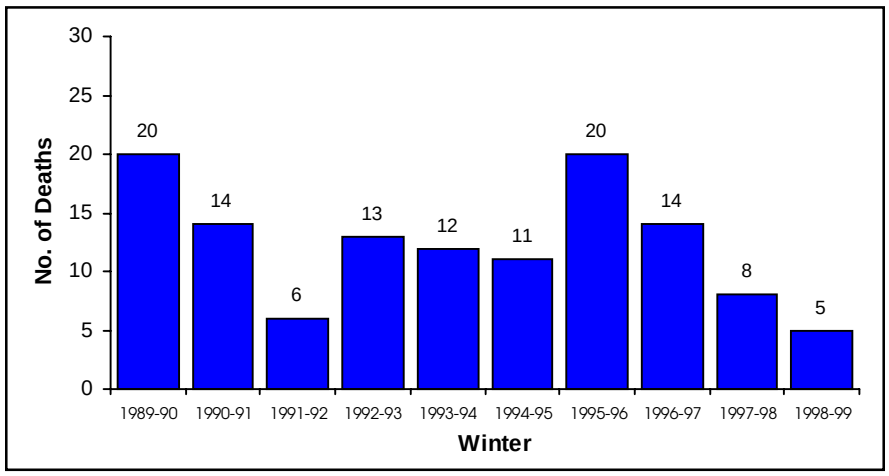

Figure 1. Recorded hypothermia deaths by winter, Missouri, 1989–90 to 1998–99.

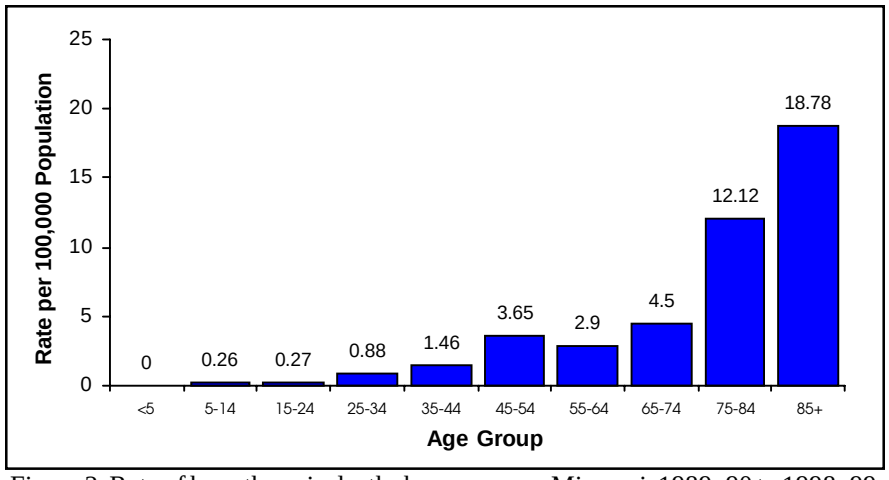

Figure 2. Rate of hypothermia deaths by age group, Missouri, 1989–90 to 1998–99..

Location of hypothermia deaths in Missouri during the past ten winters is shown in Figure 3. Among those age 65 and over, the majority of deaths, 36 (55%), occurred in the outside environment, 19 (29%) occurred inside buildings and location is unknown for 10 (15%). The assumption that the majority of elderly die due to exposure to cold inside temperatures because they are homebound or bedfast and are trying to reduce expenditures on heating does not appear to be true for Missouri. There seems to be a need for as much concern regarding the influence of mobility, impaired mental state and alcohol intoxication on the number of Missouri deaths due to hypothermia in the elderly.

Of the 36 elderly hypothermia deaths that occurred outside, 22 (61%) had apparently wandered outside their residence or were walking or working outside and fell, 7 (19%) wandered away from care facilities, 1 (3%) slept or passed out in a motor vehicle due to alcohol intoxication and 6 (17%) were found outside with no specifics given. Three of the outside falls were alcohol-related.

Of the 19 elderly hypothermia deaths that occurred inside buildings, 3 (16%) had fallen in a cold garage, 3 (16%) had insufficient heat in their residence, 2 (11%) were alcohol-related with no

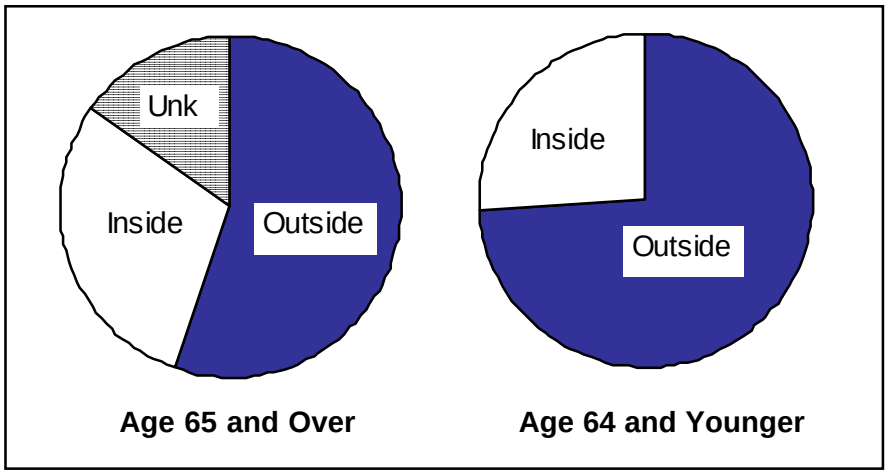

Figure 3. Location of hypothermia deaths by age category, Missouri,1989–90 to 1998–99.

specifics given, 1 (5%) fell in a cold basement, 1 (5%) fell in their residence due to alcohol intoxication, 1 (5%) fell in their residence with no specifics given and 8 (42%) were found in their residences with no specifics given. Of the three deaths due to insufficient heat, one had run out of LP gas, one had probably turned off the heat in their residence due to alcohol intoxication and one had tipped over and shut off a space heater due to alcohol intoxication.

As might be expected, the majority, 43 (74%), of the hypothermia deaths in those age 64 and younger occurred in a cold outside environment, with only 15 (26%) occurring inside buildings. See Figure 3. There apparently is a need for concern over the number of deaths that were alcohol or drug-related in this age category. Of the 43 individuals who died outside, 22 (51%) had apparently fallen or passed out due to alcohol intoxication, 12 (28%) were walking or working outside, 3 (7%) apparently slept or passed out in their motor vehicles due to alcohol intoxication, 2 (5%) wandered away from home or got lost, 1 (2%) passed out on a porch due to methamphetamine use, 1 (2%) fell asleep or passed out in a motor vehicle due to cocaine use, 1 (2%) fell in a drainage ditch due to diphenhydramine intoxication and 1 (2%) was found outside with no specifics given.

Of the 15 hypothermia deaths in those age 64 and younger that occurred in buildings, 5 (33%) were found in vacant or condemned buildings, 3 (20%) were alcohol-related with no further details given, 1 (7%) apparently fell or passed out in the garage due to cocaine use, 1 (7%) apparently fell or passed out in a stairwell due to alcohol intoxication, 1 (7%) tipped over a space heater and shut it off due to alcohol intoxication and 4 (27%) were found in their residence with no specifics given.

Hypothermia-related morbidity and mortality can be prevented by early recognition of symptoms and prompt medical attention. Persons who are outdoors for extended periods of time during cold weather should wear insulated or layered clothing, including headgear, that does not retain moisture; maintain their fluid and calorie intake; abstain form drinking alcoholic beverages; and avoid overexertion and excessive sweating.

Increased awareness is the most effective way to prevent and treat hypothermia. Health professionals should alert their high-risk patients to the dangers of hypothermia and ways to prevent it. When prescribing medications, physicians should inform patients regarding any expected effects on core body temperature or mental confusion. Medications reported to contribute to core temperature depressions include: acetaminophen, atropine, barbiturates, benzodiazepines, bethanechol, bromocriptine, butyrophenones, chloral hydrate, clonidine, cyclic antidepressants, glutethimide, lithium, morphine, nicotinic acid, organophosphates, phenformin, reserpine and tetrahydrocannabinol.

Doctors, nurses and other health professionals—including those working in emergency rooms—should remember to check patients for hypothermia. Relatives of patients who have mental confusion due to medications or disease or who are suffering from chronic alcoholism should be encouraged to check on their family members frequently, especially during extreme cold temperatures.

Hypothermia is reportable in Missouri. Physicians are urged to report cases promptly to their local public health agency.

Information on prevention of cold-related illness is available through the Department of Health Home Page at **http://www.health.state.mo.us/ColdAndHeat/CAndH.html.**

Disease Reporting

Cases of reportable diseases and conditions should be reported promptly to your local public health agency, or to the Missouri Department of Health at

(800) 392-0272
(during working hours)
or
(573) 751-4674
(after hours, weekends or holidays)

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The Managing Editor is H. Denny Donnell, Jr, MD, MPH, State Epidemiologist. Production Manager is Diane C. Rackers. Questions or comments should be directed to (573) 751-6128 or toll free (800) 392-0272.

Alternate forms of this publication for persons with disabilities may be obtained by contacting the Missouri Department of Health, Office of Epidemiology, P.O. Box 570, Jefferson City, MO 65102-0570, Ph: (573) 751-6128. TDD users can access the preceding phone number by calling (800) 735-2966.

IMMUNIZATION VIDEOCONFERENCE

The Section of Vaccine-Preventable and Tuberculosis Disease Elimination will sponsor the following Centers for Disease Control and Prevention (CDC) live satellite broadcast:

Epidemiology and Prevention of Vaccine-Preventable Diseases

March 30, April 6, 13 and 20, 2000 (4-day course)

This live interactive program will provide the most current information available in the constantly changing field of immunization. Session one will cover principles of vaccination, general recommendations on immunization and strategies to improve immunization coverage levels. Session two will cover diphtheria, tetanus, pertussis, rotavirus and polio. Session three will cover measles, mumps, rubella and varicella. Session four will focus on hepatitis B, *Haemophilus influenzae* type b, influenza and pneumococcal disease.

This live, interactive satellite videoconference will feature question and answer sessions in which participants can address questions to the course instructors on toll-free telephone lines. Continuing education credits for a variety of professions will be offered based on 14 hours of instruction.

For more information about the course, site locations and times, contact the immunization representative located in your district health office or the Section of Vaccine-Preventable and Tuberculosis Disease Elimination at (800) 699-2313.

Missouri EPIDEMIOLOGIST

Volume 21, Number 6 *November-December 1999*

Rubella on the Increase in the United States

Georgia Storm, R.N.
Section of Vaccine-Preventable and Tuberculosis Disease Elimination

Although there is a vaccine to prevent rubella, the disease remains a problem within the United States. Therefore, providers must be ever vigilant when seeing a rash illness.

An RNA virus causes rubella. It is a mild febrile disease characterized by a maculopapular rash that begins on the head and moves rapidly to the trunk. The rash, which is pink in color, is small with fine discrete spots. Children may present with few or no constitutional symptoms. Adults may experience a 1–5 day prodrome consisting of low-grade fever, headache, mild coryza and conjunctivitis. The most characteristic clinical feature is lymphadenopathy, which precedes the rash by 5–10 days. The incubation period is usually 16–18 days. Rubella can be transmitted from one week prior to at least four days after the onset of rash.

Testing for rubella is recommended when diagnosing the disease. Serology for IgM antibody is the recommended test, and should be drawn 3–5 days after rash onset and sent to the Missouri State Public Health Laboratory in Jefferson City. Local public health agencies can provide assistance with testing.

The main health concern related to rubella is the ocurrence of intrauterine death, spontaneous abortion, and congenital rubella syndrome (CRS) in infants born to women who were not immune and who acquired infection with rubella virus during pregnancy. CRS can occur in 90 percent of infants born to women who were infected during their first trimester of pregnancy.

In 1999, two cases of rubella were reported in Missouri; two cases were also reported in 1998. The 1999 cases occurred in the young Hispanic male population migrating from Mexico. Both cases worked in the meat and poultry processing industry. The two cases in 1999 were linked to cases reported in surrounding states.

Missouri was more fortunate in 1999 than its neighboring states of Nebraska and Iowa. As of week 42, 87 rubella cases were reported in Nebraska. Seven of the 87 were in women who were pregnant. One stillbirth has been linked to these cases. As of week 50, 30 rubella cases were reported in Iowa. The majority of these cases were in the Hispanic population, and worked in the meat and poultry industry.

Mexico began immunizing infants and children against rubella in 1998. As of week 45, the number of rubella cases reported in Mexico was 18,248. This number is much lower than 1998, when 49,704 rubella cases were reported.

The Missouri Department of Health has sent information to all major meat and poultry processing plants in Missouri to inform them of the possible risk of rubella. The department asked for their assistance in screening for rash illness and in reporting the illness to their local public health agencies.

Susan E. Reef, M.D., of the federal Centers for Disease Control and Prevention, recommends the following actions to prevent rubella, and the subsequent tragic consequences of CRS:

Vaccinate Persons Who Do Not Have Documented Proof of Immunity to Rubella

In the United States, children should receive the first dose of MMR at age 12–15 months, and the second dose at 4–6 years of age. Persons who are born after 1957 and who do not have a medical contraindication should receive at least one dose of MMR vaccine unless they have documentation of vaccination with at least one dose of measles-, rubella-, and mumps-containing vaccine.

(continued on page 2)

Inside this Issue...

(continued from page 1)

Make Sure Your Foreign-Born Patients Are Vaccinated

Rubella and CRS are at record low levels in the United States, primarily due to the success of the rubella vaccination program. However, rubella vaccination has only recently been introduced in many developing countries, and many foreign-born persons may not be immune to rubella.

Think Rubella When You See Suspicious Rashes

Even though rubella is at record low levels, it can be introduced and spread in the United States. If someone presents with a rash illness that may be consistent with rubella or measles, a diagnosis of rubella or measles needs to be ruled out. Obtaining a measles- and rubella-specific IgM blood test from the individual is critical.

Think CRS When You See Any Congenital Malformation Consistent With CRS

CRS is rare in the United States, however, it does occur. If an infant is born with ANY congenital malformation consistent with CRS, do not assume that a positive rubella titer drawn during pregnancy rules out CRS. If you suspect CRS, obtain a rubella-specific IgM blood test.

Report All Cases of Rubella and CRS To Your Local or State Public Health Agency

Once a case of rubella or CRS has been identified, the local public health agency should be contacted immediately. All cases should be investigated and control measures implemented.

If you have questions about rubella disease, please call the Section of Vaccine-Preventable and Tuberculosis Disease Elimination at (800) 699-2313 or (573) 751-6133.

Tuberculosis Awareness Fortnight March 12-25, 2000

The Missouri Department of Health Section of Vaccine-Preventable and Tuberculosis Disease Elimination along with the American Lung Associations of Eastern and Western Missouri recognize Tuberculosis Awareness Fortnight, March 12-25, 2000 and World TB Day on March 24, 2000.

Hospitals are encouraged to conduct tuberculosis grand rounds during this time. Physicians and health care providers are encouraged to participate by providing displays, educational materials and lectures to staff and clients on the importance of tuberculosis screening, prevention and treatment.

Grand rounds entitled "The New Guidelines for Treatment of Latent TB Infection" are being planned in the Kansas City area on March 17 at St. Luke's Hospital of Kansas City at 7:45 a.m. and at the University of Missouri-Kansas City School of Medicine at 12:00 noon. The speaker at both sites will be John Jereb, M.D., from the Centers for Disease Control and Prevention, the Division of TB Elimination. For more information on the grand rounds, call the American Lung Association of Western Missouri at (816) 842-5242.

The American Lung Association of Eastern Missouri will provide tuberculosis educational materials and speakers upon request. Call (314) 645-5505 for more information.

If you are interested in additional information or would like some literature on tuberculosis, please contact:

Section of Vaccine-Preventable and Tuberculosis Disease Elimination
(800) 611-2912

Rotavirus Vaccine—Intussusception Investigation in Missouri

Fazle N. Khan, M.B.B.S, M.P.H
Office of Surveillance

On August 31, 1998, the Food and Drug Administration (FDA) licensed a tetravalent rhesus-based rotavirus vaccine (RRV-TV), trade name, RotaShield®*, manufactured by Wyeth-Lederle Vaccines, for use among infants. As of June 13, 1999, 13 cases of intussusception among recipients of RotaShield®* were reported to the Vaccine Adverse Events Reporting System (VAERS) from 7 states. VAERS is a passive surveillance system jointly operated by the FDA and the Centers for Disease Control and Prevention (CDC). Intussusception is a type of bowel obstruction where one segment of the bowel becomes enfolded within another segment. The condition is most common among young children, especially infants 4–10 months of age.

Of the 13 intussusception cases reported to VAERS, 11 (84.6%) developed intussusception following dose 1 of the three-dose RRV-TV series, and 10 of 13 (76.9%) developed symptoms within one week of receipt of the vaccine. Twelve (92.3%) of the 13 cases received other vaccines concurrently with RRV-TV. Diagnosis of intussusception was confirmed radiographically in all 13 cases. Seven (53.8%) required surgical reduction. All infants recovered.

Dates of onset of reported cases ranged from November 21, 1998 to May 16, 1999. The median age of the cases was 4 months (range 2–11 months). Eight (61.5%) cases were in males.

The background rate of intussusception among infants <12 months of age was 0.39 per 1,000 person-years in four Vaccine Safety Datalink (VSD) sites during the period 1991–1997 (CDC, unpublished data). Hospital discharge data (1991–1995) from New York State revealed a rate of 0.5 per 1,000 person-years, and a rate of 0.74 per 1,000 (1995–1996) was reported from the Northern California Kaiser Permanente study.[1]

There was no federal contract for purchase of the RRV-TV (RotaShield®*) vaccine by the states. As such, use of the vaccine was limited to the private sector, as well as to a few states that bought the vaccine with their own funds and in selected areas where Medicaid paid for the vaccine. In Missouri, the bulk of the vaccine distributed by the manufacturer was to St. Louis City, St. Louis County, and the Kansas City area, along with some distribution to the Springfield area, but very little elsewhere in the state.

Because reporting of adverse events following vaccination to VAERS is passive and incomplete[2], the actual number of cases of intussusception among recipients of RRV-TV was assumed to be greater. Data available as of June 30, 1999, neither established nor refuted an association between receipt of rotavirus vaccine and the development of intussusception, so additional studies were needed. In June 1999, CDC designed a case-control study to estimate the association between rotavirus vaccination and intussusception. The Missouri Department of Health (DOH) was approached to participate in this multi-state investigation since rotavirus vaccine was distributed in Missouri, and also since 2 of the 15 cases of intussusception following rotavirus vaccine administration reported to VAERS were from Missouri.

In Missouri, the hospital discharge database for 1993–1997 was reviewed to identify hospitals that had cases of intussusception in children under 1 year of age. Eleven hospitals in the state which had more than one case in the above time frame were identified and approached to participate in the investigation. The hospitals were: Bothwell Regional Health Center (Sedalia), Cardinal Glennon Children's Hospital (St. Louis), Children's Mercy Hospital (Kansas City), Cox Medical Center South (Springfield), Hannibal Regional Hospital (Hannibal), Heartland Regional Medical Center (St. Joseph), St. John's Mercy Medical Center (St. Louis), St. John's Regional Health Center (Springfield), St. Louis Children's Hospital (St. Louis), Southeast Missouri Hospital (Cape Girardeau) and the University of Missouri Health Sciences Center (Columbia).

The participating hospitals were asked to review their discharge databases to identify all records with an ICD-9 discharge diagnosis code of 560.0, and to search their radiology record-keeping system for CPT codes 74283 (barium enema for intussusception) and 44050 (reduction laparotomy for intussusception) in children aged 1–11 months (children born on or after April 1, 1998) and discharged between November 1, 1998–June 30, 1999. As a result of these activities, 12 cases which met the case definition were identified in Missouri in the following six hospitals: St. Louis Children's Hospital (4), Children's Mercy Hospital (3), Cardinal Glennon Children's Hospital (2), Cox Medical Center South (1), St. John's Mercy Medical Center (1), and St. John's Regional Health Center (1).

The medical records for each of the cases were reviewed on-site between July 15 and August 20, 1999. Data were recorded on the "Hospital Abstraction

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*Use of trade names and commercial sources is for identification only and does not imply endorsement by the Department of Health.

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Form" provided by CDC. Parent/guardian and health care/vaccination provider interviews were conducted for each of the cases identified. CDC provided the standardized pre-interview script, "Parent Intussusception Questionnaire" and "Provider Intussusception Questionnaire."

The following hospitals were identified as "Birth Hospitals" for the 12 cases: Barnes-Jewish Hospital (St. Louis), Cox Medical Center South (Springfield), Deaconess Medical Center–Central (St. Louis), DePaul Health Center (Bridgeton), North Kansas City Hospital (North Kansas City), Southeast Missouri Hospital (Cape Girardeau), St. Mary's Health Center (Richmond Heights) and Truman Medical Center–West (Kansas City) in Missouri. Three (25.0%) of the 12 cases were born outside of Missouri.

Four controls were selected for each case. Controls were selected from among those who were born in the same hospital as a case. Controls were matched by age (within seven days of the date of birth of the case).

The centralized electronic birth registry database in Missouri was utilized for identifying controls. Based on information on the date of birth and hospital of birth of each case, a list was generated of all children born on the same day and within seven days of the case's birth for each of the nine Missouri cases.

The control investigation and data collection started on August 5, 1999. Procedures and questionnaires used for parental and provider interviews and for ascertainment of vaccination histories, were identical to those used for the cases. The investigation in Missouri ended on September 8, 1999, when the last provider was interviewed.

In summary, 12 cases of intussusception meeting the case definition for the investigation were identified in Missouri among children born between April 1, 1998 and March 1, 1999. None of these 12 cases received the rotavirus vaccine. Nine (75.0%) of the 12 cases were born in Missouri hospitals. Controls were selected from among infants born in the same hospitals within seven days of the birth of the respective cases. Four controls for each case were needed for the investigation, for a total of 36 controls. Missouri completed 38 control investigations.

Out of the 38 controls investigated, only three (7.9%) had received three doses of the rotavirus vaccine, one (2.6%) received two doses, and one (2.6%) received only one dose of the vaccine. Including the 12 cases and the 38 controls, only 5 (10.0%) of the 50 infants investigated in Missouri had received one or more doses of rotavirus vaccine.

On October 22, 1999, the Advisory Committee on Immunization Practices (ACIP), after a review of scientific data from several sources, withdrew its recommendation that RRV-TV be administered at 2, 4 and 6 months of age. The results of the CDC study are reprinted below.

DOH expresses its gratitude and thanks to all the hospitals, providers and parents who participated in the investigation in Missouri.

REFERENCES:

1. Rennels MB, Parashar UD, Holman RC, Le CT, Chang HG, Glass RI. Lack of an apparent association between intussusception and wild or vaccine rotavirus infection. Pediatric Infect Dis J 1998;17:924–5.
2. Rosenthal S, Chen R. The reporting sensitivities of two passive surveillance systems for vaccine adverse events. Am J Public Health 1995; 85:1706–9.

Withdrawal of Rotavirus Vaccine Recommendation

Reprinted from the Centers for Disease Control and Prevention Morbidity and Mortality Weekly Report, November 5, 1999, Vol. 48, No. 43.

In July 1999, CDC recommended that health-care providers and parents postpone use of the rhesus rotavirus vaccine-tetravalent (RRV-TV) (RotaShield®*, Wyeth Laboratories, Inc., Marietta, Pennsylvania), for infants, at least until November 1999. This action was based on reports to the Vaccine Adverse Event Reporting System of intussusception (a type of bowel obstruction that occurs when the bowel folds in on itself) among 15 infants who received rotavirus vaccine. Also at that time, the manufacturer, in consultation with the Food and Drug Administration, voluntarily ceased further distribution of the vaccine.

On October 22, 1999, the Advisory Committee on Immunization Practices (ACIP), after a review of scientific data from several sources, concluded that intussusception occurs with significantly increased frequency in the first 1–2 weeks after vaccination with RRV-TV, particularly following the first dose. Therefore, ACIP no longer recommends vaccination of infants in the United States with RRV-TV and withdraws its recommendation that RRV-TV be administered at 2, 4, and 6 months of age. Children who received rotavirus vaccine before July and remain well are not now at increased risk for intussusception.

Rotavirus remains the cause of a substantial health burden for children in the United States. It accounts for 20–40 deaths annually, and >50,000 hospitalizations from severe diarrhea

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* Use of trade names and commercial sources is for identification only and does not imply endorsement by CDC or the U.S. Department of Health and Human Services.

Recommendations Regarding the Use of Vaccines That Contain Thimerosal as a Preservative

Reprinted from the Centers for Disease Control and Prevention (CDC) Morbidity and Mortality Weekly Report, November 5, 1999, Vol. 48, No. 43.

On October 20, 1999, the Advisory Committee on Immunization Practices (ACIP) reviewed information about thimerosal in vaccines and received updates from CDC's National Immunization Program and several vaccine manufacturers on the current and anticipated availability of vaccines that do not contain thimerosal as a preservative. The review was prompted by a joint statement about thimerosal issued July 8, 1999, by the American Academy of Pediatrics (AAP) and the Public Health Service (PHS)[1] and a comparable statement released by the American Academy of Family Physicians.[2] These statements followed a Congressionally mandated Food and Drug Administration (FDA) review of mercury in drugs and food, which included a reassessment of the use of thimerosal in vaccines.

Thimerosal is a mercury-containing preservative that has been used as an additive in biologics and vaccines since the 1930s because it prevents bacterial and fungal contamination, particularly in multidose containers. Given the widely acknowledged value of reducing exposure to mercury, vaccine manufacturers, FDA, and other PHS agencies are collaborating to reduce the thimerosal content of vaccines or to replace them with formulations that do not contain thimerosal as a preservative as soon as possible without causing unnecessary disruptions in the vaccination system. FDA will expedite review of supplements to manufacturers' product license applications that present formulations for eliminating or reducing the mercury content of vaccines.

* Use of trade names and commercial sources is for identification only and does not imply endorsement by CDC or the U.S. Department of Health and Human Services.

Hepatitis B, DTaP, and Hib Vaccines

A single-antigen, preservative-free hepatitis B vaccine (Recombivax HB®, Merck & Co., Inc., West Point, Pennsylvania)* was licensed on August 27, 1999, and a second hepatitis B vaccine (Engerix-B®, SmithKline Beecham Biologicals, Philadelphia, Pennsylvania) that is preservative-free is under consideration for licensure.[3] One manufacturer reported that the supply of its diphtheria and tetanus toxoids and acellular pertussis (DTaP) vaccine that does not contain thimerosal as a preservative would be sufficient to meet any increased demand during the next year, and three other manufacturers are developing similar DTaP vaccines that could be licensed in the future. Multiple single-antigen *Haemophilus influenzae* type b (Hib) vaccines and the hepatitis B/Hib combination vaccine that do not contain thimerosal as a preservative are licensed, and the supply of these products is adequate to meet national needs.

The risk, if any, to infants from exposure to thimerosal is believed to be slight. The demonstrated risks for not vaccinating children far outweigh the theoretical risk for exposure to thimerosal-containing vaccines during the first 6 months of life.

Given the availability of vaccines that do not contain thimerosal as a preservative, the progress in developing such additional vaccines, and the absence of any recognized harm from exposure to thimerosal in vaccines, hepatitis B, DTaP, and Hib vaccines that contain thimerosal as a preservative can continue to be used in the routine infant schedule beginning at age 2 months along with monovalent or combination vaccines that do not contain thimerosal as a preservative.

Reported failures to vaccinate newborns at high risk for perinatal hepatitis B virus (HBV) transmission suggest that some institutions may have misinterpreted or improperly implemented the recommendations contained in the joint statement by the AAP and PHS—and subsequent clarification—to postpone hepatitis B vaccination only for newborns who are not at high risk.[1,3] Chronic HBV infection develops in approximately 90% of infants infected at birth; among chronically infected infants, the risk for premature death from HBV-related liver cancer or cirrhosis is approximately 25%.[4] All hospitals and pediatric care providers should ensure that newborn infants receive hepatitis B vaccine as recommended.[5] See Table 1. If the supply of single-antigen hepatitis B vaccines that do not contain thimerosal as a preservative is limited, the priority for its use should be to vaccinate newborn infants.[3]

Influenza Vaccine

All influenza vaccines contain thimerosal; however, ACIP recommends no changes in the influenza vaccination guidelines, including those for children and pregnant women.[6] Evidence suggests that children with certain medical conditions (e.g., cardiopulmonary disease, including asthma) are at substantially increased risk for complications of influenza.[7,8] During the influenza season, rates of cardiopulmonary hospitalizations for otherwise healthy women in their second or third trimester of pregnancy are similar to that among persons aged greater than or equal to 65 years who do not have a chronic medical illness and for whom influenza vaccination is also recommended.[9] Pregnant women with chronic medical conditions are at higher risk and have a hospitalization rate more than two times greater than among

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pregnant women without other high-risk medical conditions. A substantial safety margin has been incorporated into the health guidance values for organic mercury exposure developed by the Agency for Toxic Substances and Disease Registry and other agencies.[10] ACIP concluded that the benefits of influenza vaccine outweigh the potential risks for thimerosal.

Table 1. Recommendations for Hepatitis B Vaccination of Newborn Infants With Thimerosal-Containing Vaccines and Vaccines That Do Not Contain Thimerosal as a Preservative

Mother's HBsAg Status at Delivery	Recommendation
Positive or Unknown	Vaccinate at birth. Use vaccine that does not contain thimerosal as a preservative; if unavailable, use thimerosal-containing vaccine.
Negative	Vaccinate at birth or by age 2 months. At birth, use vaccine that does not contain thimerosal as a preservative. At 2 months of age, use either thimerosal-containing vaccine or vaccine that does not contain thimerosal as a preservative.
Negative-High-risk*	Same as "Negative" above, except thimerosal-containing vaccine can be administered at birth.

* Populations or groups that have a high risk for early childhood hepatitis B virus (HBV) transmission, including Alaska Natives, Asian-Pacific Islanders, immigrant populations from countries in which HBV is of high or intermediate endemicity, and households with persons with chronic HBV infection.

REFERENCES:

1. CDC. Thimerosal in vaccines: a joint statement of the American Academy of Pediatrics and the Public Health Service. MMWR 1999;48:563–5.
2. American Academy of Family Physicians. Policy statement of the American Academy of Family Physicians on thimerosal in vaccines, July 8, 1999. Available at **http://www.aafp.org/policy/camp/20.html**.
3. CDC. Availability of hepatitis B vaccine that does not contain thimerosal as a preservative. MMWR 1999;48:780–2.
4. Margolis HS, Coleman PJ, Brown RE, Mast EE, Sheingold SH, Arevalo JA. Prevention of hepatitis B virus transmission by immunization: an economic analysis of current recommendations. JAMA 1995; 274:1201–8.
5. CDC. Hepatitis B virus: a comprehensive strategy for eliminating transmission in the United States through universal childhood vaccination: recommendations of the Immunization Practices Advisory Committee. MMWR 1991;40(no. RR-13).
6. CDC. Prevention and control of influenza: recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 1999;48(no. RR-4):1–28.
7. Mullooly JP, Barker WH. Impact of type A influenza on children: a retrospective study. Am J Public Health 1982;72:1008–16.
8. Glezen WP, Taber LH, Frank AL, Gruber WC, Piedra PA. Influenza virus infections in infants. Pediatr Infect Dis J 1997;16:1065–8.
9. Neuzil KM, Reed GW, Mitchel EF, Simonsen L, Griffin MR. Impact of influenza on acute cardiopulmonary hospitalizations in pregnant women. Am J Epidemiol 1998;148:1094–102.
10. Agency for Toxic Substances and Disease Registry. Toxicological profile for mercury. Atlanta, Georgia: Agency for Toxic Substances and Disease Registry, 1999.

If you have questions regarding the use of vaccines, please contact the Section of Vaccine-Preventable and Tuberculosis Disease Elimination at (800) 699-2313.

Disease Reporting

Cases of reportable diseases and conditions should be reported promptly to your local health department, or to the Missouri Department of Health at

(800) 392-0272
(during working hours)
or
(573) 751-4674
(after hours, weekends or holidays)

Bioterrorism: A Brief Update For Missouri

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Section of Communicable Disease Control and Veterinary Public Health

Because to date there have been no incidents of mass bioterrorism in Missouri, we can only imagine what might happen and plan accordingly. Realistic scenarios have been prepared and discussed for anthrax and smallpox.[1,2] If an event were perpetrated without warning it would most likely not be discovered until victims became ill.

One of the most difficult concepts to grasp is that there could be large numbers of victims for which no intervention would be possible. This could happen because by the time patients have symptoms (making it possible to ascertain that an outbreak is occurring), for many of the bioterrorism agents disease progression in victims would have reached the point where therapeutic interventions would no longer be effective. Therefore, one of the most important roles of the medical response is to maximize the number for whom intervention could prevent morbidity or mortality. This involves two categories of efforts: facilitating early detection and preparing a rapid response.

Since the published list of weaponized agents are rarely seen in clinical practice, most health providers are unfamiliar with their clinical presentations. Furthermore, if exposed persons had dispersed to different geographic areas since initial exposure, victims would seek medical care from different sources and valuable time could be lost before enough information became available to determine that an event had occurred.

To counteract these problems, each health care provider needs to be aware of the possibility of bioterrorism, have an understanding of the agents and their symptoms, and know whom to call if they encounter a patient or situation which raises their suspicions. There are an increasing number of articles in the medical literature on the specific biologic agents with potential for bioterrorism, along with their diagnosis and treatment.[3,4,5,6,7,8] The Association for Professionals in Infection Control and Epidemiology, Inc. (APIC) has also published a plan for bioterrorism that is available for hospitals to adapt.[9] This plan contains a good list of websites and other resources.

Epidemiologic clues that may signal a biologic or chemical terrorist attack are listed on page 10. It is interesting to note that in the well-known instance in Oregon[10], where mass illness was induced for political gain, none of these trigger elements would have been present, while the recent discoveries of Legionnaires' disease and hantavirus were made in situations where many of them were present. Vigilance combined with an ongoing scientific approach is essential in the investigation of every outbreak.

Many different sorts of health care institutions, such as 911 operators, poison control centers, emergency rooms, outpatient clinics and hospitals could help in the early detection of an event if there were systems in place for rapid reporting of irregularities. To facilitate increased surveillance, early detection requires that systems be developed to monitor other events which could be early warning signs of an outbreak: sales of pharmaceuticals, illness in wildlife[11] and agricultural or domesticated animals, and pathology in plants.

Since these systems are not currently in place, there is a need for the formation of new relationships, new surveillance methods, and new tools to house, monitor and interpret any information that might be collected from these sources. As general awareness about the threat of bioterrorism increases, these systems may become easier to develop, and in doing so there is opportunity to improve the entire public health infrastructure, and promote early discovery of routine outbreaks as well.

The second category of efforts relates to preparation for a rapid response. This would involve treatment of victims, prevention of secondary transmission to others, and determining as rapidly as possible who else may have been exposed in order to initiate prophylactic therapy to decrease morbidity and mortality among the exposed.

Many entities are preparing to assist with different parts of this response. By Presidential Directive, the Federal Bureau of Investigation (FBI) has been designated as the lead agency in any bioterrorism event. The FBI has initiated the National Domestic Preparedness Office (NDPO), web site: **http://www.fbi.gov/programs/ndpo/default.htm**, an agency with representatives from each of the federal agencies with major roles in disaster response: Department of Energy (DOE), Department of Defense (DOD), Federal Emergency Management Agency (FEMA), Health and Human Services (HHS), Environmental Protection Agency (EPA) and Department of Energy (DOE). The Federal Response Plan (FRP), web site: **http://www.fas.org:80/irp/offdocs/pdd39_frp.htm**, details the capabilities and roles of these agencies.

The U.S. Department of Health and Human Services (HHS) is the lead federal agency designated for the medical response. The HHS has established an Office of Emergency Preparedness, and the Centers for Disease Control and Prevention (CDC) has established an Office of Bioterrorism to coordinate planning activities at the federal level. Efforts are currently underway to develop long distance training modules for state and local health agencies so

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that every county in the country will have access to information on the detection of outbreaks and implementation of coordinated response.

World-renowned experts from the U.S. Army Medical Research Institute of Infectious Disease (USAMRIID), CDC, and other organizations presented a live, interactive three-day satellite broadcast entitled, "Biological Warfare and Terrorism—The Military and Public Health Response" in September 1999.[12] The purpose of the broadcast was to inform and educate health professionals about the proper medical response in the event of an intentional biological agent release. Information about the broadcast can be found at **http://www.biomedtraining.org/biomenu.htm**. Participant materials and a videotape of the broadcast are also available through this web site.

In Missouri, health care providers are encouraged to maintain an attitude of alertness for bioterrorism, and to call their local public health agency with any suspicions. The 24 hour number for the Missouri Department of Health is (573) 751-4674.

REFERENCES:

1. Bardi J. Aftermath of a hypothetical smallpox disaster. Emerg Infect Dis 1999;5(4):547–51, **http://www.cdc.gov/ncidod/eid/vol5no4/contents.htm**.
2. Bartlett JG. Applying lessons learned from anthrax case history to other scenarios. Emerg Infect Dis 1999; 5(4):561–63, **http://www.cdc.gov/ncidod/eid/vol5no4/contents.htm**.
3. Dixon TC, Meselson M, Guillemin J, et al. Anthrax. N Engl J Med 1999;341(11):815–26.
4. Frans DR, Jahrling PB, Friedlander AM, et al. Clinical recognition and management of patients exposed to biological warfare agents. J Am Med Assoc 1997;278:399–411.
5. Inglesby TV, Henderson DA, Bartlett JG, et al. Anthrax as a biological weapon; medical and public health management. J Am Med Assoc 1999;281:1735–45.
6. National Research Council. Chemical and biological terrorism: Research and development to improve civilian medical response. Washington DC: National Academy Press, 1999, **http://books.nap.edu/books/0309061954/html/index.html**.
7. Christopher GW, Cieslak TJ, Pavlin JA, Eitzen EM. Biological warfare—A historical perspective. JAMA 1997;278(5):412–17.
8. Henderson DA. The Looming threat of bioterrorism.Science 1999;283:1279–82
9. Association for Professionals in Infection Control and Epidemiology, Inc. (APIC). APIC/CDC bioterrorism readiness plan for healthcare facilities. Washington DC: APIC 1999, **http://www.apic.org/html/cat/bioplan.html**.
10. Torok TJ, Tauxe RV, Wise RP, Livengood JR, Sokolow R, Mauvais S, et al. A large community outbreak of salmonellosis caused by intentional contamination of restaurant salad bars. JAMA 1997; 278:389-95.
11. CDC. Update: West Nile virus encephalitis—New York, 1999. MMWR 1999;48(41):944–55, **http://www2.cdc.gov/mmwr/weekcvol.html**.
12. United States Army Medical Research Institute of Infectious Diseases. Biological warfare and terrorism: The military and public health response. Satellite Broadcast, September 1999, **http://www.biomedtraining.org/biomenu.htm**.

Antibiotic Resistance

Antibiotic resistance occurs when bacteria that cause infection are not killed by the antibiotics taken to stop the infection. The bacteria survive and continue to multiply causing more harm. Widespread use of antibiotics promotes the spread of antibiotic resistance.

The Centers for Disease Control and Prevention (CDC) estimates that about 100 million courses of antibiotics are provided by office-based doctors each year. Approximately half of those are unnecessary; being prescribed for colds, coughs and other viral infections.

Smart use of antibiotics is the key to decreasing, or even reversing, the spread of resistance. Although the solution to the problem of antibiotic resistance is complex, we do know that when communities have decreased antibiotic use, they also have decreased resistance.

CDC's Division of Bacterial and Mycotic Diseases has launched a new web site dedicated to the prevention of antibiotic resistance. The site contains information about antibiotic resistance and offers educational materials to order. The site is located at **http://www.cdc.gov/ncidod/dbmd/antibioticresistance**.

Clinical Characteristics of Critical Biologic Agents* - 7/1/99

Disease	Inhalational Anthrax	Pneumonic plague	Tularemia	Smallpox	Botulism	Filoviruses (Maburg, Ebola)	Arenaviruses (Lassa, Junin, Sabia, Machupo, Guanarito)
Signs & Symptoms	Fever, malaise, cough, mild chest discomfort; possible short recovery phase then onset of dyspnea, diaphoresis, stridor, cyanosis, shock. Death 24-36 hours after onset of severe symptoms. Hemorrhagic meningitis in up to 50%.	High fever, chills, headache, hemoptysis, and toxemia, rapid progression to dyspnea, stridor, and cyanosis. Death from respiratory failure, shock, and bleeding.	Typhoidal — aerosol, gastrointestinal, & intradermal challenge. Fever, headache, malaise, chest discomfort, anorexia, non-productive cough. Pneumonia in 30-80%. Oculoglandular from inoculation of conjunctiva with periorbital edema.	Fever, back pain, vomiting, malaise, headache, rigors. Papules 2-3 days later, progressing to pustular vesicles. Abundant on face and extremities initially.	Ptosis, blurred vision, diplopia, generalized weakness, dizziness, dysarthria, dysphonia, dysphagia, followed by symmetrical descending flaccid paralysis and respiratory failure.	Fever, severe headache, malaise, myalgia, maculopapular rash day 5; progression to pharyngitis, hematemasis, melena, uncontrolled bleeding; shock/ death days 6-9	Fever, malaise, myalgia, headache, N/V, pharyngitis, cough, retrosternal pain, bleeding, tremors of tongue and hands (Junin), shock, aseptic meningitis, coma, hearing loss in some
Physical Exam	Non-specific physical findings.	Rales, hemoptysis, purpura	No adenopathy with typhoidal illness	Papules, pustules, or scabs of similar stage, many on face/extremeties, palms/soles	No fever, patient alert, postural hypotension, pupils unreactive, normal sensation, variable muscle weakness	petechia, ecchymoses, conjunctivitis, uncontrolled bleeding	conjuntivitis, petechia, ecchymoses, flushing over head and upper torso
Clinical Tests	Serology, gram stain, culture, polymerase chain reaction (PCR); CXR - widened mediastinum. **Rarely pneumonia.**	Gram stain, culture, serum immunoassay for capsular antigen, PCR, immunohistochemical stains (IHC)	Serology, culture, PCR, IHC; CXR - pneumonia, mediastinal lymphadenopathy, or pleural effusion.	Guarnieri bodies on Giemsa or modified silver stain, virions on electron microscopy, PCR, viral isolation, IHC	Serology, toxin assays/anaerobic cultures of blood/ stool; electromyography studies	Serology, PCR, IHC, electrom microscopy (EM); elevated liver enzymes, thrombocytopenia	Serology, viral isolation, PCR, IHC; leukopenia, thrombocytopenia, proteinuria
Key Differential Diagnosis	Hantavirus pulmonary syndrome (HPS), Dissecting aortic aneurysm (no fever)	HPS, TB, community acquired pneumonia (CAP), meningococcemia rickettsioses	Atypical CAP, Q fever, Brucellosis	Varicella, vaccinia, monkeypox, cowpox, disseminated herpes zoster	Guillain Barre', myasthenis gravis, tick paralysis, Mg++ intoxication, organophosphate poisoning, polio	meningococcemia, malaria, typhus, leptospirosis, borreliosis, thrombotic thrombocytopenic purpura (TTP), rickettsiosis, hemolytic uremic syndrome (HUS), arenaviruses	leptospirosis, meningococcemia, malaria, typhus, borreliosis, rickettsiosis, TTP, HUS, filoviruses
Incubation Period	1-6day [up to 45 day]	2-3 day	1- 10 day [average 3-5 day]	7-17 day [average 12 day]	1 - 5 day	2-19 day [average 4-10 day]	5-21 day Lassa; 7-16 day Sabia, Junin, Machupo, Guanarito
Duration of Illness	3-5 day	1-6 day	> 2 wks	4 wks	Death 24-72 hour or respiratory support for months	days to weeks	7-15 day
Case Fatality	~ 100% if untreated	Usually fatal unless treated in 12-24 hour	10-35% untreated	up to 30%; higher in flat-type or hemorrhagic disease	High mortality without respiratory support	>80%	15-30%
United States Epidemiology	None	2-3 cases/yr. mainly in SW US	150 case/yr.; transmitted by ticks/deer flies or contact with infected animals	None	30 cases/yr.; food intoxication, wound infections, or honey ingestion (infants)	none	none

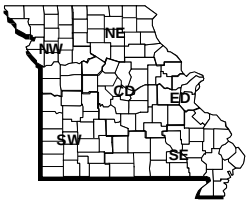
*Partial list developed by the federal government of potential agents of biological warfare and terrorism.

Source: United States Army Medical Research Institute of Infectious Diseases
Biological Warfare and Terrorism--The Military and Public Health Response
Satellite Broadcast Student Material, September 1999

Epidemiologic Clues That May Signal Biologic or Chemical Terrorist Attack

1. Large numbers of ill persons with a similar disease or syndrome.
2. Large numbers of cases of unexplained diseases or deaths.
3. Unusual illness in a population (e.g., renal disease in a large population may suggest exposure to a toxic agent such as mercury).
4. Higher morbidity and mortality in association with a common disease or syndrome or failure of such patients to respond to usual therapy.
5. Single case of disease caused by an uncommon agent (i.e., *Burkholderia mallei* or *pseudomallei*, smallpox, viral hemorrhagic fever, pulmonary anthrax).
6. Several unusual or unexplained diseases coexisting in the same patient without any other explanation.
7. Disease with an unusual geographic or seasonal distribution (i.e., tularemia in a nonendemic area, influenza in the summer).
8. Illness that is unusual (or atypical) for a given population or age group (i.e., outbreak of measleslike rash in adults).
9. Unusual disease presentation, (i.e., pulmonary instead of cutaneous anthrax).
10. Similar genetic type among agents isolated from distinct sources at different times or locations.
11. Unusual, atypical, genetically engineered, or antiquated strain of an agent (or antibiotic resistance pattern).
12. Stable endemic disease with an unexplained increase in incidence (i.e., tularemia, plague).
13. Simultaneous clusters of similar illness in noncontiguous areas, domestic or foreign.
14. Atypical disease transmission through aerosols, food or water that suggests deliberate sabotage.
15. Ill persons who seek treatment at about the same time (point source with compressed epidemic curve).
16. No illness in persons who are not exposed to common ventilation systems (have separate closed ventilation systems) when illness is seen in persons in close proximity who have a common ventilation system.
17. Unusual pattern of death or illness among animals, (which may be unexplained or attributed to an agent of bioterrorism) that precedes or accompanies illness or death in humans.

Source: United States Army Medical Research Institute of Infectious Diseases Biological Warfare and Terrorism—The Military and Public Health Response Satellite Broadcast Student Material, September 1999[12]



Missouri Department of Health
Division of Environmental Health and Communicable Disease Prevention

QUARTERLY DISEASE REPORT

Reporting Period*
July - September, 1999

	Districts											3 Month State Totals		Cumulative		
	CD	** ED	NE	** NW	SE	** SW	*** OTHER	Kansas City	St. Louis City	St. Louis Co.	Spfd. Greene Co.	1999	1998	For 1999	For 1998	5 YR MEDIAN
Vaccine Preventable																
Influenza	0	1	0	2	0	0		0	0	0	0	3	1	828	1074	227
Measles	0	0	0	0	0	0		0	0	0	0	0	0	0	0	1
Mumps	0	0	0	0	0	1		0	0	0	0	1	0	1	3	6
Pertussis	9	1	2	10	0	1		12	2	2	0	39	12	54	28	35
Viral Hepatitis																
A	7	18	2	13	27	18		16	6	12	34	153	188	351	538	863
B	4	2	0	2	0	7		8	1	6	7	37	61	128	186	259
C	0	13	0	0	0	2		17	0	0	2	34	5	128	10	n/a
Non-A Non-B	0	0	0	0	0	0		0	0	0	0	0	0	0	1	18
Unspecified	0	0	0	0	0	0		0	0	0	0	0	0	0	2	1
Meningitis																
Meningococcal Disease	1	6	0	3	1	0		0	0	1	0	12	5	47	18	36
Meningococcal Other	0	3	0	2	0	0		0	0	0	0	5	9	32	48	27
Enteric Infections																
Campylobacter	24	22	8	31	17	30		15	3	36	8	194	186	434	399	448
E. Coli O157:H7	5	3	0	4	2	1		0	1	6	2	24	25	41	37	37
Salmonella	54	42	13	24	35	28		19	7	40	8	270	252	542	492	441
Shigella	20	54	1	4	2	43		9	34	34	10	211	47	570	98	312
Parasitic Infections																
Cryptosporidiosis	4	0	0	2	0	3		2	0	0	5	16	12	23	20	n/a
Giardiasis	38	35	4	27	11	20		11	17	48	6	217	287	505	562	543
Respiratory Diseases																
Legionellosis	2	0	0	0	0	1		1	0	2	0	6	6	13	14	13
Sexually Transmitted																
AIDS	4	0	1	7	3	4	4	30	37	22	4	116	147	311	334	172
HIV Infection	8	1	0	6	2	2	0	20	45	22	0	106	103	323	310	N/A
Chlamydia	294	78	88	158	252	308		897	607	403	****	3085	3608	10044	9253	N/A
Gonorrhea	143	18	22	35	140	61		719	583	338	****	2059	2480	5609	6632	6315
P & S syphilis	1	0	0	0	6	0		2	5	2	****	16	24	66	81	91
Tuberculosis																
TB Disease	2	1	0	0	5	1		5	10	10	2	36	27	130	121	244
TB Infections	N/A	N/A	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Zoonotic																
Ehrlichiosis	11	1	1	2	0	5		0	0	2	1	23	10	26	10	n/a
Lyme Disease	0	0	0	0	0	0		0	0	0	1	1	5	17	11	38
Rabies (Animal)	1	0	0	0	0	0		0	0	0	2	3	11	12	31	23
Rocky Mountain Spotted Fever	1	2	0	1	0	1		0	0	0	1	6	2	14	4	14
Tularemia	4	0	1	1	1	3		0	0	0	0	10	8	16	11	11

Outbreaks
Foodborne - 5
Waterborne -
Hepatitis A - 1
Legionellosis - 1
Salmonella - 1
Scabies - 3
Shigella - 2
Other -

Low Frequency Vaccine Preventable Diseases
Diphtheria
Hib Meningitis
Hib other invasive - 3
Polio
Rubella -
Tetanus

Low Frequency Diseases
Anthrax
Botulism -1
Brucellosis - 1
Chancroid
Cholera
Encephalitis
Granuloma Inguinale
Kawasaki Disease - 1
Leptospirosis - 1
Listeria - 4
Lymphogranuloma Venereum
Plague
Psittacosis
Rabies (human)
Reye syndrome
Rheumatic fever, acute
Streptococcal Disease, Invasive, Grp A - 5
Streptococcus pneumoniae,
Drug Resistant Invasive Disease
Toxic Shock Syndrome - 1
Trichinosis
Typhoid Fever

*Reporting Period Beginning June 27, 1999 and Ending October 2, 1999.
**Totals do not include Kansas City, St. Louis City, St. Louis County, or Springfield
***State and Federal Institutions
****Included in SW District
- Data unavailable

Due to data editing, totals may change

TEAR OUT FOR FUTURE REFERENCE

St. Louis STD/HIV Prevention Training Center
Winter/Spring 2000 Course Schedule

FIBEROPTIC COURSES:

Fiberoptic courses are two-way audio and visual allowing for interaction between faculty and students.
Courses will be offered in the following:

Missouri cities: Columbia, Kansas City, Poplar Bluff, St. Louis and Springfield
Iowa cities: Cedar Rapids, Council Bluff, Davenport, Des Moines, Ottumwa and Sioux City.

STD Laboratory Methods

This course is designed for both clinicians and laboratorians who perform basic laboratory procedures in support of STD clinical services. This course includes12 hours of lecture and 12 hours of supervised clinical practicum.
Course Dates: Feb 3, 10, 17 and 24, 2000
Course Time: 8:00 a.m.–12: 00 p.m.
Course Fee: $60. 24 hrs Category 1 CME, 28.8 Nursing Contact hrs.

Viral Sexually Transmitted Diseases

This course is a comprehensive study of the diagnosis, management and treatment of the most common viral STDs. Topics include Herpes Simplex Virus, Human Papillomavirus, Hepatitis B and C and HIV. This course includes 6 hours of lecture and 8 hours of supervised clinical practicum.
Course Dates: March 2 and 9, 2000
Course Time: 8:30 a.m.–12: 00 p.m.
Course Fee: $40. 14 hrs Category 1 CME; 16.5 Nursing Contact hrs

STD Clinician Course

This course, an intensive overview of STDs, includes 19 hours of lecture, 1 hour of case discussion and 24 hours supervised clinical practicum.
Course Dates: March 16, 23 and 30, April 6, 13 and 20, 2000
Course Time: 8:00 a.m.–12: 00 p.m.
Course Fee: $90. 44 hrs Category 1 CME, 52.8 Nursing Contact hrs.

STD Update Course

This course provides up-to-date information on STDs including recommendations from the newly revised CDC STD Treatment Guidelines. This course includes 9 hours of lecture and 16 hours of supervised clinical practicum.
Course Dates: April 27, May 4 and 11, 2000
Course Time: 8:30 a.m.–12: 00 p.m.
Course Fee: $65. 25 hrs Category 1 CME, 30.0 Nursing Contact hrs.

SATELLITE BROADCAST

STD Grand Rounds Genital Dermatology

March 9, 2000, 12:00 p.m.–2: 00 p.m. CST
This program is offered at no cost to attend or downlink

For additional information on these courses please contact :

Dodie Rother
St. Louis STD/HIV Prevention Training Center
Washington University School of Medicine
660 So. Euclid
Campus Box 8051
St. Louis, MO 63110
Phone: 314 (747) 0294
Email: std/hiv@im.wustl.edu
Web site: **http://www.umsl.edu/services/itc/std_ptc.html**

Missouri International Health Clinics - 1999

The following is a list of international health clinics in Missouri as of December 1999:

TEAR OUT FOR FUTURE REFERENCE

Boone County

Elizabeth Allemann, MD
Travelers Health Center
1200 Fay Street
Columbia, MO 65203
Ph: (573) 443-7070

Thomas R. Cheek, MD
Fairview Clinic Internal Medicine
101 South Fairview
Columbia, MO 65203
Ph: (573) 882-4464

University of Missouri
Student Health Center
South 6th
Columbia, MO 65211
Ph: (573) 882-7481
Attn: Jackie
Students only by appointment

Butler County

Kirby Turner, MD
Kneibert Clinic
686 Lester
P.O. Box 220
Poplar Bluff, MO 63902-0220
Ph: (573) 686-2411

Clay County

Clay County Health Department
1940 - 152 Highway
Liberty, MO 64068
Ph: (816) 781-1601
Wed by appointment

Cole County

Donald P. Miller, MD
Internal Medicine, Inc.
Jefferson City Medical Group
1241 W. Stadium Blvd, Div 2200
Jefferson City, MO 65109
Ph: (573) 635-5264

Greene County

Stephen D. Christiansen, MD
Ozark Medical-Surgical
Associates, Ltd.
1900 South National, Suite 2800
Springfield, MO 65804
Ph: (417) 881-8819

Dennis N. Morrison, DO
Thomas J. Legg, DO
Leea Reed, DO
William L. McKay, DO
BIO-KINETIC Clinical Applications
1816 W. Mt.Vernon
Springfield, MO 65802
Ph: (417) 831-0456

Don S. Overend, MD
Lisa Ovens, MD
Jim Waterfield, MD
Richard T. Honderick, DO
Smith-Glynn-Callaway Clinic
3231 South National
Springfield, MO 65807-7396
Ph: (417/) 883-7422
Mon–Fri 8–5pm/Sat 8–12noon

Springfield-Greene County
Health Center
227 East Chestnut
Springfield, MO 65802
Ph: (417) 864-1686
By appointment only

Harrison County

Hansa N. Patel, MD
Natu B. Patel, MD
Bethany Medical Clinic
Box 506, South 69 Highway
Bethany, MO 64424
Ph: (816) 425-3154

Jackson County

Joseph H. Brewer, MD, FACP
Robert E. Neihart, M.D.
Paul M. Jost, M.D.
Plaza Internal Medicine
Infectious Disease, PC
4620 J.C. Nichols Parkway, Suite 415
Kansas City, MO 64112
Ph: (816) 531-1550

Allen J. Parmet, MD, MPH
Midwest Occupational Medicine
Union Hill Commons
3037 Main, Suite 201
Kansas City, MO 64108
Ph: (816) 561-3480

Joseph F. Waeckerle, MD
Albers Medical Inc.
440 Broadway, Suite 116
Kansas City MO 64111
Ph: (816) 931-0100

Jasper County

Dennis Estep, DO, MPH,MS, FACOEM
Gary Brandon, DO, MPH,FACMP
Occumed
3201 McClelland Blvd.
Joplin MO 64804
Ph: (417) 626-3047

Joplin City Health Department
513 Kentucky Avenue
Joplin, MO 64801
Ph: (417) 623-6122
Thurs, 10 a.m. by appointment

Jefferson County

John H. Krickbaum, MD
Hillsboro Medical Services
10661 Highway 21
Hillsboro, MO 63050
Ph: (314) 789-5809/5936

Lincoln County

Asif Akhtar, MD
Troy Surgical Clinic
900 East Cherry St.
Troy, MO 63379
Ph: (314) 528-8585

Randolph County

Dr. Robert Lancey
Health Service Clinic MACC
101 College Ave
Moberly MO 65270
Ph: (660) 263-4110 Ex. 209

St. Louis City

BarnesCare
5000 Manchester (Midtown)
St. Louis, MO 63110
Ph: (314) 747-5800

BarnesCare
401 Pine Street (Downtown)
St. Louis, MO 63102
Ph: (314) 331-3000

David C. Campbell, MD, MEd
Family Medicine Program
Deaconess Hospital
6125 Clayton Avenue, Suite 222
St. Louis, MO 63139
Ph: (314) 768-3685

Dr. Steven Cummings, MD
Employee Health at St. Louis University
1310 South Grand
St. Louis, MO 63104
Ph: (314) 268-5499

Victoria Fraser, MD
Infectious Disease
Washington University
School of Medicine
660 South Euclid, Box 8051
St. Louis, MO 63110
Ph: (314) 362-4412

Dr. Ernest Bobby Kleier
Healthline Corporate Health Services
1617 South 3rd St
St. Louis, MO 63104
Ph: (314) 421-2557

Dr. Ernesto Lam
Healthline Corporate Health Services
2626 North Broadway
St. Louis, MO 63102
Ph: (314) 241-5804

Anne Nicolazzi, M.D.
HealthLine Corporate Health Services
1212 South Grand
St. Louis, MO 63104
Ph: (314) 577-8060

St. Louis County

Barnes Care Traveler's Hlth. Service
11501 Page Service Road
St. Louis, MO 63146
Ph: (314) 993-3014
Mon–Fri, 8 a.m. to 4 p.m.

Dr. Vladimir Gelfand
Deaconess Medical Center
Clarkson Square Shopping Center
1751 Clarkson Road
Chesterfield, MO 63017
Ph: (314) 537-0377

Dr. Sharon Godar, MD, MPH
Monsanta World Head Quarters
A Medical Clinic
800 N. Lindbergh Blvd
St. Louis, MO 63167
Ph: (314) 694-2194

James H. Hinrichs, MD
Northwest Infectious Disease Services, LLC.
DePaul Professional Office Building
12277 DePaul Drive, Suite 201
Bridgeton, MO 63044-2585
Ph: (314) 344-7070

Edward F. Hendershot, MD
Northwest Infectious Disease Services, LLC.
11125 Dunn Road, Suite 412
St. Louis, MO 63136
Ph: (314) 355-7997

Shelby Kopp, M.D.
Healthline Corporate Health Services
83 Progress Parkway
Maryland Heights, MO 63043
Ph: (314) 436-9440

Paul B. L'Ecuyer, MD
Barnes West Medical Consultants
Professional Building #2, Suite 200
10 Barnes West Drive
St. Louis, MO 63141
Ph: (314) 434-8828

Farrin A. Manian, MD, MPH
David A. Janssen, MD
Adult Infectious Diseases
621 South New Ballas Road, Suite 3002
St. Louis, MO 63141
Ph: (314) 569-6171

Dr. Cheryl Patterson
Healthline Corporate Health Services
1709 Gilsinn Lane
Fenton, MO 63026
Ph: (314) 436-9440

St. Louis County Department
of Community Health
and Medical Practice
John C. Murphy Health Center
6065 Helen Avenue
Berkeley, MO 63134
Ph: (314) 854-6410 - Ext. 6321
Mon–Wed, 8 a.m.– 4 p.m.
Thurs, 8 a.m.–7 p.m.
St. Louis county residents only

Mary Trottier, MD, MPH
Monsanto Chesterfield
BB1B Medical
700 Chesterfield Parkway
St. Louis, MO 63198
Ph: (314) 737-6511

David E. Turner, MD, PhD
St. Louis Health Care Network Centre
Point Corporate Health Services
350 Village Square Drive, Suite 100
Hazelwood, MO 63042
Ph: (314) 731-8087

Trav-L-Med, Inc.
12818 Tesson Ferry Road, Suite 101
St. Louis, MO 63128
Ph: (314) 849-6611

Sheik Zahid, MD
Healthline Coporatie Health Services
7927 N Lindbergh
Hazelwood, MO 63042
Ph: (314) 831-8511

Scott County

William Shell, MD
Ferguson Medical Group
1012 North Main Street
P.O. Box 1068
Sikeston, MO 63801-5097
Ph: (573) 471-0330

Recommendations for International Travel

Reprinted with permission from Mississippi State Department of Health Mississippi Morbidity Report, Vol. 17, No. 8, March 1999. Portions of article were modified to reflect Missouri Department of Health procedures.

Thomas J. Brooks, Jr., Ph.D., M.D.
Mississippi State Department of Health

People travel to foreign countries for a variety of reasons including business opportunities, educational advancement, government service—including military assignment—and personal enjoyment. They remain abroad for lengths of time varying from a few hours to many years, and they live and/or work in every conceivable part of the globe under the whole spectrum of climatic conditions. The variety of human diseases and injuries encountered spans the whole of medical practice.

Foreign travel, therefore, cannot be conceived of as a single entity. If you are planning a one week trip organized by a reputable tour operator to western Europe, Japan, Australia and selected other areas you should have little to be concerned about more than you might have at home. If, on the other hand, you are contemplating a visit to—or residence in—an area or country where sanitation is poor, food and water are unsafe, disease is epidemic, no schools or books are available, no reliable means of communication exists, there are no medical facilities of any kind and the government is unstable, then you have much to be concerned about.

There are, however, certain things to which **everyone** should give careful consideration before leaving the United States whether for a short or long period of time.

The U. S. Department of State publishes vital, timely information on most countries of the world giving brief descriptions of the political, cultural and economic conditions extant. Especially useful are the travel warnings, since from time to time the Department of State declares that United States residents **may not** enter certain countries legally. Address: **http:// travel.state.gov/ travel_warnings. html**

In addition, the Centers for Disease Control and Prevention (CDC) publishes a Summary of Health Information for International Travel *(The Blue Sheet*), Health Information for International Travel *(The Yellow Book*) and a Summary of Sanitation Inspections of International Cruise Ships *(The Green Sheet*). It also lists international recommendations and requirements for vaccine administration, etc. Address: **http:// www.cdc.gov/travel/index/htm**. Or, you may contact one of Missouri's international health clinics (listed on pages 13–14) or the Section of Vaccine-Preventable and Tuberculosis Disease Elimination at (800) 699-2313 for the latest information on immunizations and vaccine availability. Be sure to allow time to complete all the immunizations you need.

The Missouri Department of Health provides travel-related information. Yellow fever vaccine is given only at the local health departments and private providers listed on pages 13–14. These international health clinics also offer immunizations for hepatitis A, typhoid fever, pre-exposure rabies, Japanese encephalitis, cholera, hepatitis B, plague and meningococcal vaccines or immunization globulin. If you need only routine immunizations before you travel or boosters such as Td, MMR, or polio, you may visit any local health department.

If you have not had a recent medical check-up, you should see your doctor to make certain that you are physically able to make the trip and to be sure that your immunizations are current for the country/countries to be visited.

In addition to immunizations, it should be determined well before departure whether or not the health/accident insurance in force at home will be acceptable in the country/countries, to be visited. If not, it may be wise to consider the purchase of trip insurance.

If you are taking any kind of prescription medication on a continuing basis, be certain that you have **more** than enough to last for the intended duration of the trip. Delays occur without warning, and certain medications may be difficult or impossible to obtain in the host country, and, if available, may be of questionable quality and safety.

If you wear eyeglasses or contact lenses, take along an extra pair, and if you require a special diet, make certain before you depart that it will be available.

Foreign travelers will experience varying degrees of exposure risks, depending upon where they go, the season of the year, etc. Persons going from the United States to Canada, western Europe, Australia, New Zealand and other selected areas generally have no increased risks. But the vast majority of the world's people do not live under sanitary conditions. In some locations, the facilities are extremely primitive or nonexistent, and a visitor may face life-threatening illness. The remarks and suggestions below should apply to some of the more primitive situations. The traveler should get the best possible advice prior to departure and, on arrival, should make a careful assessment of the actual dangers to health.

The vast majority of disease causing agents will be acquired in one of the following ways:

A. By eating or drinking something contaminated.

(continued on page 16)

(continued from page 15)

B. By being exposed to a contagious/ communicable disease.

C. By being bitten by a vector carrying a disease agent.

D. By some form of physical injury.

A. Food and Drink

Water: The old adage to "**boil it, cook it, peel it, or forget it**" applies in many parts of the world.

1. The safest way to make contaminated water safe is to **boil** it yourself by whatever means are available.

2. Take along a canteen and give the waiter a few coins to bring it to you full of **boiling** water. If this is done in the evening, it may be packed away overnight and drunk the next day. Standard aluminum canteens are recommended, **not** galvanized steel.

3. If neither of the above is possible, consider drinking only from the hot water tap in the lavatory if there is one. Even if the water is not very hot it may be reasonably safe if it has been as hot as 140º F for 20 minutes or more and not recontaminated. Most hotels have some degree of hot water some time during the day.

4. If none of the above is available, almost any kind of beer is safer than unboiled water. Many brands, especially dutch and german are available in remote areas.

5. Most carbonated drinks have such a low pH that they may be effective in killing some viruses and bacteria.

Myths, Misconceptions and Don't's:

1. Many individuals believe that "bottled water" is always safe. It may be, but in many locations if you want it in a bottle someone will put it in a bottle for you. Always distrust it if the cap is not sealed.

2. Never drink anything with ice in it. The ice will be contaminated if the water is, and the alcohol in an alcoholic drink will **not** make it safe.

3. Chlorine and iodine "drops" or tablets are not to be relied upon to make contaminated water and vegetables safe. They are surely beneficial, but their effectiveness depends on their concentration and time, and heavily contaminated water would require large amounts of both.

4. In unsanitary situations, milk and all milk products should be avoided. Canned, condensed and powdered milk may be the exceptions, depending upon where and by whom they were processed.

Food: Travelers may encounter all levels of food sanitation, depending upon where they go, and no single rule of safety will apply to all. In selected countries it may be as safe (or even safer) than at home in the United States, but in other areas it may contain pathogens that are life threatening. In such situations, one should eat only thoroughly cooked foods served hot on plates that have not been washed in contaminated water. Fruit is usually safe if you peel it yourself.

B. Contagious/Communicable Diseaes

The traveler should be concerned particularly with other persons who are sick, especially those with fever, and avoid them to the extent possible. You should be protected from those diseases against which you were immunized, but protection may not be 100%. In many countries, opportunities for sexual liaisons abound and **should be scrupulously avoided**.

Diarrhea is the common medical problem in returning travelers. If you get diarrhea while overseas, remember that dehydration is the most important thing to be concerned about with diarrhea. Be sure to drink plenty of fluids to counteract this. Mild symptoms may be countered with an over the counter (OTC) bulk agent, or if you will be someplace where temporary relief of symptoms is necessary, then an OTC anti-diarrheal agent could be used. Your physician may be willing to prescribe an antibiotic to take along with you in case you develop severe diarrhea. As with all antibiotics, if you start taking it, complete the full course of therapy. If at any time diarrhea persists, seek medical care.

C. Biting Arthropods

Mosquitoes are known to transmit nearly 100 viral and parasitic diseases. Preventing their bites may be difficult or impossible. The use of insecticides, mosquito netting and repellents, the wearing of protective clothing, and staying indoors when they are biting are all useful preventive measures.

Sleeping quarters, including the bed covers, should be inspected before retiring. In addition to mosquitoes, ticks, bedbugs, triatomid bugs, rodents, bats, dogs and even serpents may pose a problem in some locations.

D. Physical Injury

Physical injury may include sunburn, eye strain from exposure to snow or white sandy beaches, bruises, contusions, penetrating wounds, animal bites and, rarely, broken bones. Some injuries may not be preventable, but dangerous situations should be avoided whenever possible. Seat belts should always be used in any vehicle in which they are available.

E. Dental Heatlh

A dental check-up is essential before leaving the United States, even for a relatively short period of time. The quality of dental care varies in different countries, and in some may not be available at all.

F. Medical Care Abroad

Those who are traveling or living abroad for extended periods of time may develop illnesses requiring medical care. If this should happen, the U.S. Embassy is often the best place to look for help. It should have a list of American doctors in the country, if there are any, and may know of local doctors who trained in the United States. If board-certified physicians can be identified, they should usually be sought first. Embassy personnel can often recommend doctors with whom they have had good experiences and, conversely, suggest the avoidance of certain others. If no American physician is available, it is useful to contact the British, Canadian, Australian, New Zealand or other English speaking embassy or consulate. Any United States citizen who expects to remain in a foreign country for more than a few days should register with the American embassy so that he/she may be contacted quickly in case of emergency.

G. General

A small emergency kit containing an antiseptic, some bandages, tape, etc. may be useful. An antihistamine, inhaler, lozenges and other cold medications may be needed. If you are on a cruise and are susceptible to motion sickness, some type of medication to prevent or control this should be included.

VIDEOCONFERENCES in 2000

The Section of Vaccine-Preventable and Tuberculosis Disease Elimination will sponsor the following Centers for Disease Control and Prevention (CDC) immunization satellite broadcasts:

CORRECTED DATES

Epidemiology and Prevention of Vaccine-Preventable Diseases

March 23 and 30, April 6 and 13, 2000 (4-day course)

This live interactive program will provide the most current information available in the constantly changing field of immunization.
Session 1 will cover principles of vaccination, general recommendations on immunization and strategies to improve immunization coverage levels.
Session 2 will cover diphtheria, tetanus, pertussis, pneumococcal disease (childhood) and polio.
Session 3 will cover measles, mumps, rubella and varicella.
Session 4 will focus on hepatitis B, *Haemophilus influenzae* type b, influenza and pneumococcal disease (adult).

Preparing for the Next Influenza Pandemic (Part II)

June 22, 2000

This program will serve as a follow-up to the 1999 videoconference.
Several states will participate to share their plans for a pandemic situation.

Immunization Update

September 14, 2000

This program will provide the most current information available in the constantly changing field of immunization.

Surveillance of Vaccine-Preventable Diseases

December 7, 2000

This program will provide guidelines for vaccine-preventable surveillance, case investigation and outbreak control.

These live, interactive satellite videoconferences feature question and answer sessions in which participants can address questions to the course instructors on toll-free telephone lines. Continuing education credits will be offered for a variety of professions.

For more information about the courses, site locations and times, contact the immunization representative located in your district health office or the Section of Vaccine-Preventable and Tuberculosis Disease Elimination at (800) 699-2313.

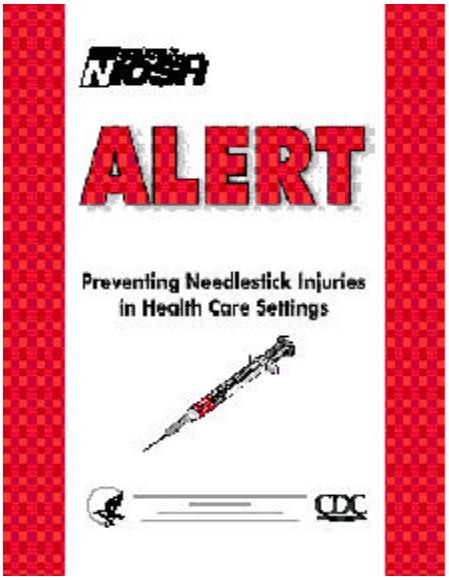
Withdrawal of Rotavirus Vaccine Recommendation

(continued from page 4)
and dehydration. Vaccination against rotavirus would be the optimal means to prevent such illnesses. RRV-TV was recommended because it was shown in prelicensure trials to be a safe and effective vaccine. In those trials, RRV-TV prevented rotavirus in at least 50% of cases of diarrhea and almost all of the hospitalizations. Postlicensure evaluation, however, has identified intussusception as an uncommon, serious adverse event associated with the vaccine.

The relation between intussusception and RRV-TV merits further research. The findings could impact directly on use of this and other rotavirus vaccines. In addition, the worldwide burden of rotavirus disease remains substantial. Thus, the ACIP's decision may not be applicable to other settings, where the burden of disease is substantially higher and where the risks and benefits of rotavirus vaccination could be different.

In the United States, rotavirus remains the primary cause of parents seeking health care for children with severe dehydrating diarrhea, particularly during the winter. Because of the withdrawal of this vaccine recommendation, the ACIP recommends that educational efforts be directed at parents and health-care providers to help parents prevent dehydration and to recognize and immediately seek medical care for severe diarrhea in children. These efforts should focus on the early diagnosis and treatment of severe dehydration from diarrhea, particularly among infants and children aged ≤5 years.

Preventing Needlestick Injuries in Health Care Settings



The National Institute for Occupational Safety and Health (NIOSH) requests assistance in preventing needlestick injuries among health care workers. These injuries are caused by needles such as hypodermic needles, blood collection needles, intravenous (IV) stylets, and needles used to connect parts of IV delivery systems. These injuries may cause a number of serious and potentially fatal infections with bloodborne pathogens such as hepatitis B virus (HBV), hepatitis C virus (HCV), or human immunodeficiency virus (HIV)—the virus that causes acquired immunodeficiency syndrome (AIDS). These injuries can be avoided by eliminating the unnecessary use of needles, using devices with safety features, and promoting education and safe work practices for handling needles and related systems. These measures should be part of a comprehensive program to prevent the transmission of bloodborne pathogens.

This Alert provides current scientific information about the risk of needlestick injury and the transmission of bloodborne pathogens to health care workers. The document focuses on needlestick injuries as a key element in a broader effort to prevent all sharps-related injuries and associated bloodborne infections. The document describes five cases of health care workers with needlestick-related infections and presents intervention strategies for reducing these risks. Because many needleless devices and safer needle devices have been recently introduced and the field is rapidly evolving, the Alert briefly describes an approach for evaluating these devices.

"Preventing Needlestick Injuries in Health Care Settings," Publication No. 2000-108, is available at no charge by calling (800) 356-4674, or online at **http://www.cdc.gov/niosh/2000-108.html**.

Missouri Information for Community Assessment (MICA)

Norma Helmig
Bureau of Health Resources Statistics

The State of Missouri faces serious health issues. Not all health threats impact communities equally. Therefore, to improve the health of the state overall, communities and the state must tailor programs to address problems where they exist, using appropriate public health interventions designed to work in that community.

The Missouri Information for Community Assessment (MICA) system is a breakthrough effort in offering an easy-to-use Internet tool for communities and public health professionals to access health information and data. This interactive system allows users access to health information that may be used in setting policies, guiding health programs and educating policymakers and citizens on their communities' health status.

MICAs are accessible through the Missouri Department of Health's web page at **http://www.health.state.mo.us/MICA/nojava.html**. An individual can follow the simple steps to summarize health data, calculate rates and prepare information in a graphic format for presentation. Users can choose from among the many conditions and generate ad hoc data tables of percents or age-adjusted rates by year of occurrence, age, gender, race or county/zip code of residence.

Presently, the following MICAs are available:

- Births
- Deaths
- Emergency Room Visits
- Hospital Discharges
- Inpatient Procedures
- Motor Vehicle Crash & Outcomes
- Pregnancies
- Preventable Hospitalizations
- All Injuries
- Assault Injuries
- Self-Inflicted Injuries
- Unintentional Injuries
- Physicians (MD or DO)
- Registered Nurses
- Licensed Practical Nurses

The Department of Health also created Community Data Profiles that are accessible through the web site at **http://www.health.state.mo.us/GLRequest/profile.html**. These profiles provide quick and easy access to health data.

Presently, there are community data profiles on thirteen subject areas:

- Cause of Death
- Chronic Diseases
- Economic
- Hospitalization
- Hospitals
- Infectious Disease
- Unintentional Injury
- Maternal, Infant and Child Health
- Medicaid Participation
- Nursing Homes
- Population
- Leading Problems

Each community data profile has data on 15–30 indicators, providing number of events, rate, statistical significance, quintile ranking and the state rate. Each indicator is then linked to a resource page that provides a definition of the indicator, risk factors, condition description, intervention strategies, state and community resources and programs, published reports and other related web sites.

The Department of Health web site is constantly being updated and improved. A future addition planned is an index to help locate information in the MICAs and Community Data Profiles.

Take time to explore the Department of Health web site at http://www.health.state.mo.us. Some of the many other things that can be found there are:

- News Releases
- Meeting Notices
- Job Opportunities
- Requests for Funding
- Integrated Strategic Plan
- Publications
- Resource Material
- Community Health Initiatives
- Rules and Regulations

We welcome your comments in our continuing effort to improve our web site. If you have questions or comments, please call Norma Helmig at (573) 751-6279 or email her at helmin@mail.health.state.mo.us.

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The Managing Editor is H. Denny Donnell, Jr, MD, MPH, State Epidemiologist. Production Manager is Diane C. Rackers. Questions or comments should be directed to (573) 751-6128 or toll free (800) 392-0272.

Alternate forms of this publication for persons with disabilities may be obtained by contacting the Missouri Department of Health, Office of Epidemiology, P.O. Box 570, Jefferson City, MO 65102-0570, Ph: (573) 751-6128. TDD users can access the preceding phone number by calling (800) 735-2966.

LATE BREAKERS

☞ The Missouri Department of Health is working with the Centers for Disease Control and Prevention to investigate an increase in the rate of blastomycosis cases in the Southeastern Health District of the state. Two Epidemic Intelligence Service (EIS) Officers arrived on January 10, 2000 to begin a joint investigation. Over the past seven years, 20 of the 28 cases identified in Missouri were found in five counties in the Southeastern Health District. For more information, contact the Section of Communicable Disease Control and Veterinary Public Health at (800) 392-0272.

☞ **Influenza Update:** As of January 8, 2000 , there have been 1,210 preliminary confirmed influenza cases reported to the Missouri Department of Health. The predominant strain among the cases reported has been subtyped is A(H3N2), compatible with the A Sydney component of the current vaccine. The number of cases of influenza-like illness reported through the active sentinel surveillance system during the last week of 1999 was only slightly higher than the 10-year average. Weekly influenza reports are now available through the Department of Health web site at **http://www.health.state.mo.us/Influenza/index.html**.

Although influenza occurs every year during the winter months, it is important to report outbreaks of influenza and influenza-like illness that occur in the community and institutional settings. Any outbreak of disease is a category I notifiable disease and is reportable to the Missouri Department of Health or the local public health agency within 24 hours of first knowledge or suspicion, by telephone, FAX or other rapid communication. Confirmed influenza is a category II disease and reportable within three days.

Guidelines for influenza outbreak control in long term care facilities can be found in Section 8 of **Infection Control Guidelines for Long Term Care Facilities**. Section 10 of this publication contains an influenza fact sheet. This publication was recently distributed to long term care facilities in Missouri, and is also available through the department's web site at **http://www.health.state.mo.us/Publications**. If you have questions about influenza, please contact the Section of Communicable Disease Control and Veterinary Public Health at (800) 392-0272.